

CREATING COLLEGE OPPORTUNITY: THE INFLUENCE OF SCHOOL-BASED COLLEGE
COUNSELING ON POSTSECONDARY ENROLLMENT

by

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(Under the Direction of James C. Hearn)

ABSTRACT

School-based counselors are the primary facilitators of college transition for many students, yet little is known about their influence on college-going behavior. Given the need to improve college participation rates, and given the substantial number of students who rely on school personnel to access college, the following, two-part dissertation aims to assess the relationship between school-based college counseling and postsecondary attendance, and devotes special attention to the postsecondary destinations of students with low socioeconomic status. Analyzing data from the Educational Longitudinal Study of 2002, Part One employs coarsened exact matching and multi-level modeling to examine the effects of student-counselor visits on postsecondary enrollment, as well as determine whether the effects of such visits vary by socioeconomic status. Results suggest that visiting a counselor for college entrance information has a positive and significant influence on students' likelihood of postsecondary enrollment, and that counseling-related effects are greatest for students with low socioeconomic status. Part Two is a multi-state analysis and employs difference-in-differences modeling to assess the enrollment-related effects of the National College Advising Corps (NCAC), an organization that aims to supplement the work of school counselors and help guide low-SES and other underrepresented students through the college admissions and financial aid processes. Results suggest that NCAC and other similar organizations may improve

college-going in high schools that primarily serve low-SES students and where enrollment rates are less than what measures of high school achievement and college readiness would indicate. In sum, both studies reveal the positive influence that school-based college counselors may have on improving the postsecondary enrollment of low-SES and other disadvantaged students.

INDEX WORDS: school counseling, postsecondary enrollment, low-SES, multilevel modeling, coarsened exact matching, difference-in-differences

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For Anna and Abigel.

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Chapter 1

Introduction

In an increasingly interconnected and information-based world, competitive nations must have the ability to produce a more knowledgeable and skilled population. Meeting the demands of a twenty-first century economy requires that policymakers, education professionals, and other stakeholders devise new and innovative ways of improving the educational attainment of its citizenry, while ensuring that more people have the means to access and complete postsecondary education.

In the past decade, several nationally prominent organizations have released reports evidencing the growing necessity of a postsecondary credential. Recent studies conducted by the National Center for Public Policy and Higher Education (2008) and Lumina Foundation (2012) show that postsecondary degree attainment is fast becoming a prerequisite for sustainable employability, as well as entry into the middle class. The U.S. Census (2009) reports that the average income of Americans with a four year degree is \$55,700 per year, compared to just \$33,800 for those possessing only a high school diploma—a gap that is predicted to grow even larger (Autor, 2010). Baum, Ma, and Payea (2010) also reveal that individuals without a postsecondary credential are more likely to be incarcerated, less likely to vote and participate in civic life, and less likely to have adequate health insurance. Unfortunately, the outlook for those possessing only a high school degree is expected to grow even bleaker in the years ahead. The National Commission on Community Colleges (2008) reports that half of the new jobs created in the next decade will require at least some postsecondary education, while Carnevale and Strohl (2010a) estimates this figure to be much higher at approximately 63 percent.

The impending hardships associated with postsecondary under-attainment are not limited to individuals alone; there is evidence to suggest that the United States, as a nation, is not adequately meeting the educational demands of a globalized society—an insufficiency that will likely threaten our future economic standing. Currently, the U.S. is not producing the number of college graduates needed to replace the number of highly educated people leaving our workforce via retirement, and the deficit is expected to become more severe in the next 20 years. Lumina Foundation (2012) estimates that there will be a shortage of 23 million college educated adults in the American workforce by 2025. However, this figure alone does not fully reflect the difficulties that could lie ahead for the U.S.; expertise in certain fields is also becoming increasingly scarce. Noting that 39 percent of science and engineering Ph.D. graduates in the U.S. were foreign born as of 2000, Bowen, Chingos, and McPherson (2009) insist that America can no longer expect to draw such a large portion of its technological expertise from abroad:

“It would be a mistake to believe that the United States can continue to rely so heavily on this inflow of talent from overseas . . . An important consideration to bear in mind is that universities in other parts of the world, including both Europe and Asia, are making increasingly aggressive efforts to compete for top students from all over the world. . . The moral of the story is simple: the United States is going to have to do a better job of ‘growing its own timber’” (p. 7).

Over the past several decades, researchers and policy analysts in higher education and other fields have devoted substantial effort to understanding what prevents individuals, and society at large, from achieving desired levels of postsecondary attainment. They have cited a number of factors, most notably inadequate academic preparation, lack of access to information, and insufficient financial resources (Adelman, 2006). However federal and state actors have focused almost exclusively on the

latter, traditionally and overwhelmingly relying on financial aid in order to boost college participation rates (Perna, Rowan-Kenyon, Bell, Thomas, & Li, 2008; St. John, 2003). And while financial aid has contributed to higher percentages of students enrolling in college, it has not reduced inequities in attainment across socioeconomic groups (B. Long, 2008); nor has it moved a sufficient number of low income and minority students to enroll in higher education, which is particularly troubling given that improved college participation among these demographic groups is extremely crucial to the sustained growth and competitiveness of the United States (The College Board, 2011b).

According to National Center for Education Statistics (2010), 44 percent of White adults aged 18 to 24 are enrolled in postsecondary education, compared to only 32 percent of African Americans and 26 percent of Hispanics in the same age category. Additionally, Carnevale and Strohl (2010b) reveal that college-qualified high school students from low income backgrounds attend college at half the rate of their middle-income and upper-income peers, and that low income students in the top-quartile of high school test scores enroll in college less frequently than affluent students in the lowest test quartile. Further analysis shows that even when low-income students do enroll, they do so at lower priced and less selective institutions, where resources are comparatively scarce and graduation rates are comparatively low (Karen, 2002; Thomas & Perna, 2004).

These findings indicate that student financial aid, while necessary, is not sufficient to narrow gaps in college access and attainment, nor is it sufficient eradicate the barriers that low income and other underrepresented populations face when attempting to enroll in postsecondary education. Swail and Perna (2002) assert that “the continued gaps in college enrollment and degree completion despite the dedication of such large amounts of resources suggest that a more comprehensive approach to college access and success is needed” (p. 18). This study argues more inclusive

approaches to improving college participation must involve a greater commitment to the provision of adequate and accurate college information.

In recent years, an increasing number of scholars have called attention to the barriers that many disadvantaged students face with respect to securing college-related information, and which may explain their “under-enrollment” in higher education (B. Long, 2004; McDonough, 2005; O’Connor, Hammack, & Scott, 2010; Tierney & Venegas, 2009). Previous literature suggests that low income and minority students tend to drastically overestimate the costs of college attendance (by as much as 300 percent) (Grotsky & Jones, 2004) and drastically underestimate the availability of financial aid (Horn, Chen, & Chapman, 2003). For example, Zarate and Pachon (2006) discovered that most Latino youth could not name one source of financial aid, while King J. King (2004) revealed that 850,000 Pell-eligible undergraduate students did not file a Free Application for Federal Student Aid (FAFSA). Disadvantaged students also appear to be poorly informed about the academic requirements of college attendance relative to their more advantaged peers. For instance, Avery and Kane (2004) found that a substantial proportion of low income high school seniors aspired to attend a four-year institution, but did not complete the entrance examinations (SAT or ACT), coursework, and applications needed to become eligible for admission.

The lack of information many disadvantaged students have with respect to post-secondary education is further exacerbated by their lack of access to other individuals with college-related knowledge and/or experience. While students of more advantaged means can often count on their respective families and communities to guide them through the college admissions and financial aid process, low-income students usually do not have access to the individuals and social networks that can provide them with sufficient college-related information (McDonough, 1997; Perna, 2006). For example, low-income and minority parents, many of whom have not had the opportunity to attend college themselves, are especially uninformed about the academic

and financial requirements of college attendance (Immerwahr, 2003; Tomas Rivera Policy Institute, 2004). Perna (2004) insists that most low-income and minority parents have an equal or greater desire to help further their children's education, but their ability to do so is hampered by a relative lack of knowledge and experience with respect to college, as well as various economic and psychological barriers.

On average, low-income and minority students are least likely to have adequate information regarding college, and as such, are most reliant on their respective schools for advice on how to navigate the college admissions and financial aid process (Venezia, Kirst, & Antonio, 2003). Currently, there is no school professional more important to improving college knowledge than the high school counselor (McDonough, 2005). This is especially so in the case of disadvantaged populations, as research shows that students and parents with low socioeconomic status learn most via their involvement with a school counselor (Kim & Schneider, 2005; Plank & Jordan, 2001). According to previous literature, school counselors facilitate college participation by organizing information and activities that promote college knowledge and aspirations (Holcomb-McCoy, 2010); helping parents to understand their role in the college admissions process (Rowan-Kenyon, Bell, & Perna, 2008); assisting students in academically preparing for the rigors of higher education (Choy, 2001); guiding students through the college application and decision-making process (Luna De La Rosa, 2006); and ensuring that their respective schools possess and pursue a college mission (McDonough, 1997).

However, recent studies also reveal that school counselors are increasingly unable and unwilling to adequately engage in postsecondary planning (Burdman, 2005; Hawkins, 2011; Hill, 2008; Hossler, Schmit, & Vesper, 1999; Perna, Rowan-Kenyon, Thomas, & Bell, 2008), especially for students coming from low socioeconomic and historically underrepresented backgrounds (Grubb & Watson, 2008; McDonough, 2005; McDonough & Calderone, 2006). The National Association for College Ad-

missions Counseling (2010) reports that the national student-to-counselor ratio in U.S. high schools is currently 457-to-1, and as high as 800-to-1 in some states. In addition to high student-to-counselor ratios, many school counselors are being asked to take on more job roles, none of which relate to college planning, and which force them to reduce the amount of time spent on college-related tasks (Venezia & Kirst, 2005). McDonough (2005) estimates that the average counselor currently devotes only 38 minutes per year advising each of their students on college-related matters—which is, presumably, far less than the amount of time required to provide sufficient and adequate college guidance, especially to students coming from families and backgrounds where college-going is not the norm. Other research suggests that school counselors are choosing to disengage from postsecondary planning, because they feel ill prepared (Perna, Rowan-Kenyon, Thomas, & Bell, 2008) and/or positioned (Krei & Rosenbaum, 2001) to positively influence the academic and career trajectories of their students.

Statement of Problem

Despite some evidence documenting the ability of school counselors to promote college aspirations and readiness, and more compelling evidence revealing the lack of counseling resources in many low-SES schools, little is known about the degree to which counselors effect postsecondary enrollment specifically, or whether other professionals or college outreach initiatives may be more suitable to meeting the college-related needs of low-SES students in particular. It is these gaps in knowledge that motivate the focus of this dissertation. Together, the following studies aim to quantitatively examine what prior research has yet to confirm: whether school-based college counseling actually improves the college enrollment prospects of low-SES students.

Chapter 2

A Review of the Literature: Theory and Evidence

There are several existing theoretical frameworks within which to analyze postsecondary decision making and the influence that school-based counseling may have on the college-related decisions of low-SES students specifically. Each contributes important but partial understanding of the potentially important role that school-based counselors play in the postsecondary planning process. Consistent with the most current research on the relationship between high school context and college access (Engberg & Wolniak, 2010; Roderick, Coca, & Nagaoka, 2011; Rowan-Kenyon, Perna, & Swan, 2011), this dissertation is guided both by human capital theories and sociological models of social mobility and status attainment.

Human Capital

From an economic perspective, human capital theory promotes our understanding of postsecondary choice by framing the decision to attend college as a decision that is based on potential investment returns and one that is made in order to enhance productivity (Becker, 1993). Generally, the human capital model posits that students assess the anticipated costs and benefits of postsecondary attendance and will pursue a college degree only if the perceived utility of such benefits outweighs such costs (Elwood & Kane, 2000). Becker (Becker, 1993) and others argue that that cost-benefit analyses related to educational pursuits are influenced by both monetary and non-monetary elements. For example, prospective college students are likely to count improved earning potential as one reason for enrolling in college, but they are also likely to consider the host of non-pecuniary benefits that a postsecondary

degree may bring—such as better working conditions, expanded social circles, improved health, and improved marriage prospects (Wolfe & Havemen, 2002). Costs, like benefits, also assume a financial and non-financial form. In addition to incurring monetary costs, students must also account for the potential psychic costs associated with postsecondary enrollment. For example, individuals without the ability or preparation to adequately engage in college-level coursework are likely to avoid college and the psychological distress their attendance would entail, regardless of financial circumstances (Cunha, Heckman, & Navarro, 2005). Therefore, according to the human capital model, individuals with higher levels of academic preparation and achievement, as well individuals with higher levels of financial capital, are predicted as more likely to enroll in postsecondary education (Catsiapis, 1987).

Human capital theory also affirms that individuals' assessment of the above costs and benefits will vary significantly according to the context within which they make their college-related decisions. Contrary to what some higher education scholars may posit (Goldrick-Rab, Harris, & Trostel, 2009), some human capital theorists recognize individual preferences and acknowledge that individuals can reach simultaneously different and rational conclusions about whether to attend college—even when the expected monetary costs and benefits of postsecondary attendance are seemingly similar. According to DesJardins and Toutkoushian (2005), human capital models presume that the utility or value of education is relative, not fixed. As such, rationality is not exclusive to those who make education-related decisions that the majority of observers would deem as appropriate or as yielding the most benefit. Individuals can still act rationally and make decisions that ultimately, and foreseeably (at least to others), produce undesirable outcomes. Desjardins and Toutkoushian, as well as other economic theorists (e.g., (Becker, 1993; Elwood & Kane, 2000; Paulsen, 2001), insist that such behavior is entirely consistent with the human capital model and can be attributed to personal preferences that derive from the attributes or circumstances

that shape how individuals perceive the utility of a postsecondary education—such as previous educational experiences, tolerance for risk, and/or imperfect information, among other things. In fact, both Heller (1997) and Avery and Hoxby (2004) employ human capital frameworks to demonstrate and subsequently explain why students react in different and often unanticipated ways to equal changes in the cost of college attendance.

While human capital theory illuminates the influence of preferences on postsecondary enrollment and choice, it does not attempt to explain how individuals arrive at such preferences (DesJardins & Toutkoushian, 2005; Perna, 2006). Presumably, narrowing the college access gap requires an understanding of how and why students make the postsecondary-related decisions that they make. In order to make sense of such a process, it is necessary to rely on additional theoretical constructs, namely those which provide insight into the antecedents and determinants of individual choice and behavior. The social capital framework provides one such construct.

Social Capital

Social capital consists of the resources—real or potential—that are embedded in one’s social network. Whereas human capital is the property of individuals, social capital derives from relations between and among individuals (J. C. Coleman, 1988), and as such, hinges on the environment and web of social relationships in which one finds herself. Although social capital characterizes a relatively fluid and intangible set of assets, it has material consequences. Lin (2001), for example, argues that individuals may draw upon social capital to achieve employment, acquire political assets, or generate economic returns. In addition, J. C. Coleman (1988) demonstrates that social capital gives rise to the norms, information flows, and trustworthiness needed to facilitate the creation of human capital. In U.S. society, the acquisition of human and social capital is heavily mediated by the U.S. higher education system

(Perna & Titus, 2005). For many Americans, a postsecondary degree is essential to securing the skills and credentials needed to maximize prestige, opportunity and material gain. However, accessing and completing postsecondary education in the United States requires an array of resources that may or may not be at an individual's disposal. For example, some individuals may possess the desire but not the funds to attend college, while others may not have access to the college-related information that would enable them to effectively transition into a postsecondary setting (Luna De La Rosa, 2006; Tierney & Venegas, 2009). Lin, Coleman and others suggest that the ability to procure the resources and support needed to participate in higher education is largely a function of one's social capital—and specifically—the family, community, and/or peer relationships that bring about such capital.

Conceptualizing the relationship between social capital and postsecondary participation is made easier by considering an example, such as the act of applying to college—a process that commences well before one's senior year, and entails far more than the completion of a college application. In order to secure and maintain student status at a college or university, an individual has to engage in the activities that prepare her for the academic and non-academic demands of postsecondary education. They include, but are not limited to, completing necessary prerequisite coursework, securing financial aid, and choosing an appropriate course of study—all of which are unlikely to occur without the support of others who possess prior knowledge about the requirements and expectations associated with postsecondary enrollment. According to Bourdieu (1996), the level and type of support an individual receives in his educational endeavors is based upon the amount of economic, cultural, and social capital others that others within his own network possess. For example, high school students attending schools in relatively affluent areas are likely to engage in college-related activities as early as ninth grade—in most cases, relying on their families, who offer advice regarding the classes, after-school opportunities, colleges, and ma-

jors that are suitable to their postsecondary and professional goals (J. C. Coleman, 1988; Tierney & Venegas, 2009). The adult members of such families are able to offer such advice since they have likely attended and graduated from college themselves. Moreover, they are likely to have collaborated with other similarly-positioned families in order to ensure that local educators offer the curriculum and programs that maximize the college planning opportunities and college admissions prospects of their respective children (Perna & Titus, 2005). The social capital generated from such relations leads to real and observable outcomes within the local school. Honors and other advanced courses abound; SAT and ACT prep courses are offered, often at a heavily subsidized rate; and the school consistently hosts a large number of college recruitment officers, who visit the school because it produces a large proportion of competitive and college-ready graduates each year (McDonough, 1997). Ultimately, the network of college-educated and college-committed adults within the community gives rise to a norm of college achievement, and subsequently, students begin to view postsecondary graduation as an expectation, rather than a special accomplishment (Kim & Schneider, 2005; Tierney & Venegas, 2009). In the majority of cases, expectations breed attainment, and most students within the community eventually go on to earn their postsecondary degree (see Bowen et al. (2009) for evidence and for degree trends by parental education and income).

While the scenario described above characterizes the experiences of America's most advantaged students, it lies in stark contrast to the experiences of many others. Students of low socioeconomic status, in particular, are significantly less likely to come from homes and communities where they have sufficient access to the information, resources, and support usually needed to access and succeed in postsecondary education (Ceja, 2006; Stanton-Salazar, 1997). Although students of high socioeconomic status can look to their primary source of social capital—the family unit—for information about college (Kim & Schneider, 2005), disadvantaged students usually

do not have such a luxury. For example, research consistently shows that parents play a critical role in the college decision-making of students (Hossler et al., 1999), and improve students' probability of enrolling in postsecondary education via their involvement in college preparatory course planning, school-based volunteer activities, and discussions about education-related issues with their children and with the parents of other children (Perna & Titus, 2005; Plank & Jordan, 2001). However, other evidence indicates that low-SES parents face significant barriers with respect to school involvement and to positively influencing the postsecondary prospects of their children. For example, the work of Hoover-Dempsey and Sandler (1997), Lareau (1987) suggest that due to their relative inexperience with college and with formal education more generally, low-SES parents are less confident about their ability to engage school-personnel, and as a result, are less likely to partake in educational activities, especially those which relate to college planning. Additional barriers may include language, culture, family composition (e.g. single-parent households), and the atypical working hours associated with many low-wage jobs (Tierney & Auerbach, 2004).

Presumably, low-SES students should have opportunities to interact with other individuals who possess the knowledge and/or connections needed to facilitate postsecondary transition. However, the social networks within which low-SES students reside often preclude them from doing so. Lin (2001) and others refer to the principle of homophily in order to explain how social networks function to limit social mobility. The principle of homophily, which is grounded in social capital theory, posits that social interactions occur primarily among individuals with similar lifestyles and socioeconomic characteristics. That is, individuals tend to interact with others of similar wealth or social standing. In the context of education and postsecondary admission in particular, it is easy to see how homophilous interactions may serve to hinder the college preparedness of low-SES students. For example, a particular low-SES student may have parents who support his college aspirations, but who possess little

knowledge about the college planning process. In an attempt to gather college-related information, the students' parents may refer to friends and other acquaintances within their social network, but may soon find that these individuals—who are also likely to possess low socioeconomic status—also lack accurate knowledge about the requirements for postsecondary entry (O'Connor et al., 2010). Alternatively, a low-SES student may seek the advice of his peers; however, his peers are likely to reside within the same social and community networks that he resides, and as a result, encounter the same obstacles to college-related information that he currently encounters (Perez & McDonough, 2008; Roderick et al., 2011).

Cultural Capital and Habitus

Bourdieu (1986) suggests that the barriers imposed upon disadvantaged individuals are further exacerbated by a social reproduction of class inequity—a process that is embodied in and effected by distinctions in cultural capital between people of varying socioeconomic status. Cultural capital broadly refers to the array of habits, manners, preferences, and linguistic competencies that an individual possesses and uses to access social networks and generate social capital. For Bourdieu, cultural capital and social capital is merely a disguise for—and ultimately reducible to—economic capital (Bourdieu, 1994). He argues that a society's dominant (i.e., wealthy) class imposes its culture by legitimizing it as superior and intrinsically worthwhile (Bourdieu, 1984). The legitimization of dominant class culture is accomplished primarily through pedagogic action, and more formally, through the education system (Bourdieu & Passeron, 1977). According to Bourdieu (1990) promotion and reward within school and society is based as much on adherence to “dominant” culture, as it is on ability or merit. Consequently, students without the cultural capital or traits of the wealthy class, which can include such things as gait, accent, and dress, face significant disadvantages when attempting to navigate the educational system and successfully

transition into the postsecondary sector. Moreover, according to Bourdieu (1984) and his theory of social fields, the disadvantages lower class and less wealthy individuals confront with respect to their educational and professional advancement are inevitably compounded over time. Thomson (2008) elaborates:

“Unlike a carefully manicured football field, there is no level playing ground in a social field; players how begin with particular forms of capital are advantaged at the outset because the field depends on, as well as produces more of that capital. Such lucky players are able to use their capital advantage to accumulate more and advance further than others” (p. 69).

One can see such accumulation of benefit currently unfolding in U.S. higher education, and college admissions in particular, as economically advantaged students increasingly rely on a burgeoning industry of private tutors and counselors in order to secure their place in the most selective and most affluent tiers of an increasingly stratified postsecondary system (McDonough, Korn, & Yamasaki, 1997).

Bourdieu (1996) argues that the consistent and growing constraints less advantaged students face in their efforts to access postsecondary education are eventually absorbed and reflected in habitus—an internalized and enduring set of dispositions that shapes one’s expectations and aspirations (McDonough, 2006), and which derives and is reinforced by the social and cultural circumstances in which one finds herself (Perna, 2006). Ultimately, habitus dictates what is possible for a particular individual (Horvat, 2001)—providing a “filter that implicitly determines what a student “sees” (Paulsen & St. John, 2002, 196). In the context of postsecondary choice, habitus determines and structures the set of prospective colleges that students perceive as appropriate or realistic (Paulsen & St. John, 2002). It also generates social-class-based strategies for securing desired and “acceptable” college choice outcomes (McDonough, 1997). For economically advantaged students, this usually includes

commencing the college search process early in one's high school career, remediating relative weaknesses in certain academic areas, building one's college admissions profile through extensive extracurricular involvement, taking SAT/ACT prep courses, and hiring a private college admissions counselor (McDonough et al., 1997). While habitus works to strengthen the aspirations and credentials of middle-to-upper class students, it often limits the opportunities of less advantaged populations. For example, students with insufficient social and/or cultural capital may lower their postsecondary aspirations or self-select out of certain institutions, as Maton (2008) explains:

“Rather than the educational system blocking access to social agents from non-traditional backgrounds, these social agents relegate themselves out of the system, seeing university as ‘not for the likes of me.’ Conversely, middle-class social agents are more likely to consider university education as a ‘natural’ step, as part of their inheritance. When at university they are also more likely to feel ‘at home’, for the underlying principles generating practices within the university field—its unwritten ‘rules of the game’—are homologous to their own habituses”(p.58).

Maton's claims are substantiated by previous research suggesting that many low-SES students fail to enroll in appropriately selective colleges, in large part, because they are estranged from the individuals, activities and norms that facilitate postsecondary access and success (Bastedo & Jaquette, 2011; Deil-Amen & Tevis, 2010; Engberg & Allen, 2011; Tierney & Venegas, 2009). Given the severe lack of capital—cultural and otherwise—found within the poorest and most displaced corners of American society, it is reasonable to assume that the habituses of many low-SES students preclude them from even considering college as a viable or even necessary option.

Research on relative risk aversion behavior supports this hypothesis and provides additional insight into the relationship between habitus and postsecondary ex-

pectations. Van de Werfhorst and Hofstede (2007), for example, show that education-related ambitions are primarily motivated by the desire to avoid downward social mobility, and as a result, mediate the effects of class on educational outcomes. In particular, individuals strive to earn a level of wealth and social standing that is at least comparable to that achieved by members of their family and/or social network—which, in effect, determines the level of necessity they ascribe to postsecondary endeavors (Goldthorpe, 1996). Whereas high-SES individuals essentially need a college education in order to maintain their current social standing, low-SES individuals face a lower threshold for “meeting expectations” and thus require greater assurance that an act as “risky” as enrolling in college will generate sufficient returns and will compensate for the financial and psychic costs associated with the pursuit of a postsecondary degree (Holm & Jaeger, 2008). However, as Bourdieu (1984) intimates, the prevailing culture is likely to discourage, rather than encourage, the postsecondary aspirations of low-SES students. Consequently, the college norms present within more affluent social networks are likely to be absent within the social networks of socioeconomically disadvantaged students. For these students, college attendance is not expected—or even imagined, in some cases—and so few aspire toward postsecondary attainment. Even if they are academically qualified for postsecondary education, many low-SES students are still likely to conclude that college “is not for them” (Luna De La Rosa, 2006, 1683).

Despite the phenomenal and material restrictions placed upon students with disadvantaged status, individual progress is still possible. From a Bourdieuan perspective, understanding the potential for agency and change requires that one situate habitus within its appropriate context. Maton (2008) insists that “to talk of habitus without field and to claim to analyze habitus without analyzing field, is to fetishize habitus, abstracting from the very contexts which give it meaning and in which it meaning” (p. 61). He further asserts “practice is not reducible to habitus, but rather

a phenomenon emergent from relations between social agents' habitus and their contextual social fields, which according to Bourdieu, are always in a state of flux: "A field is a game devoid of inventor and much more fluid than any game that one might design" (Bourdieu & Wacquant, 1992, 104). While Bourdieu does not explicitly focus on the prerequisites to greater equality or positive social change, he does "leave open the process of social mobility and the possibility of agency" (Lin, 1999, 30). Lin (2001) expounds upon the work of Bourdieu to demonstrate that (relatively) disadvantaged individuals can and do engage with higher-level actors to build their human and social capital, but he also insists that doing so requires extraordinary effort and is dependent upon the degree of "heterogeneity in the social structures in which actors find themselves" (p.53). In this context, "higher-level actors" represent what Lin and others refer to as "weak ties." According to Granovetter (1973), weak ties serve as a bridge to other social networks normally beyond the reach of an individual. Whereas strong ties consist of the relatives and friends that form one's core social group, weak ties are mere acquaintances; however, they serve an extremely important function. In particular, weak ties provide access to resources and information different from that provided by one's own network—making possible certain activities that were previously unimagined or considered improbable (Granovetter, 1983).

However, finding and capitalizing upon weak ties and/or the heterogeneity of a particular social field does not and should not preclude actors from relying upon a common language, culture and/or background. Portes and MacLeod (1996), Alba and Nee (2003) and others suggest that low-SES individuals who belong to an ethnic minority group or who have recently immigrated to the United States are particularly suited to benefit from socially connected individuals who possess similar histories and personal attributes. These "near-peer" actors, according to Ryabov (2009) and Portes and Zhou (1993), shield underrepresented populations from the prejudices of larger society, promote normative environments that encourage educational/occupational

attainment, and allow underrepresented individuals to pursue their academic and professional goals without abandoning their cultural and ethnic identities. In the context of higher education, several researchers have attested to the positive influence that near-peer networks and role-modeling can have on the postsecondary trajectories of underrepresented students (Bettinger & Long, 2005; Dee, 2005; Klopfenstein, 2005; Levine & Nidiffer, 1996), perhaps the most notable of whom is Bandura (1997a, 1997b), who asserts that, “seeing or visualizing people similar to oneself perform successfully typically raises efficacy beliefs in observers that they themselves possess the capabilities to master comparable activities” (Bandura, 1997b, 87).

Student Success and Mobility: The Role of Schools and School Counselors

Stanton-Salazar and Dornbusch (1995) suggest that schools, in particular, may offer disadvantaged youth the opportunity to connect with people who are alike, yet different enough to facilitate their “school success and social mobility” p(116). Low-SES students, for example, may capitalize upon the expertise of institutional agents within their respective schools—such as counselors—who can provide information and assistance with respect to college planning. However, previous studies show that a school’s ability to promote college knowledge and enrollment is closely related to the socioeconomic status of the students in attendance (McDonough, 2005; Perna & Titus, 2005). While low-SES students are more reliant on high school personnel for college-related information (A. Cabrera & La Nasa, 2001; Tomas Rivera Policy Institute, 2004), they are less likely to have access to a counselor who is available and prepared to assist in college-related activities (Krei & Rosenbaum, 2001; McDonough & Calderone, 2006; Paul, 2002). Clinedinst, Hurley, and Hawkins (2011), for instance, find that school counselors are working in low-income schools are increasingly divesting themselves of college admissions counseling.

The devaluation of postsecondary planning among school counselors is largely due to the traditionally multifaceted nature of the school counseling profession (McDonough, 2005). Since the mid-twentieth century, school counselors have been charged with fulfilling a host of essential yet unrelated job functions that range from therapeutic treatment to administrative assistance (Beesley, 2004)—leading some to characterize them as “jacks of all trades, but masters of none” (The College Board, 2011a). Historically, counselors have struggled to find a professional identity (Dahir, 2004), and often times experience a substantial disconnect between their training background and professional expectations, and the everyday realities of their job (Culbreth, Scarborough, Banks-Johnson, & Solomon, 2005). The degree of ambiguity and conflict many school counselors currently feel with respect to their job role, and to college advising in particular, can be attributed to several trends within K-12 education and the field of school counseling more specifically.

First, as the administrative responsibilities of schools have expanded, principals have assigned counselors to duties that they no longer have the time to perform, such as scheduling, hall monitoring, and various discipline-related tasks (Leuwerke, Walker, & Shi, 2009)—all of which are incompatible with the intended purpose and mission of school-based counseling (American School Counselor Association, 2005). Many believe that school counselors are vulnerable to mis-assignment because they have consistently failed to demonstrate their professional effectiveness (Baker, 2001; Beesley, 2004; House & Hayes, 2002). Without adequate evidence attesting to the positive effects of school counseling and college advisement programs, principals and other school administrators often compel counselors to serve a greater number of students and to address their “more immediate” needs (Kirchner & Setchfield, 2005). This is especially so in the case of low-SES schools, where in addition to administrative tasks, counselors are increasingly responsible for addressing issues related to substance abuse, pregnancy, in-school violence, sexual health, suicide prevention, and various

mental health crises (McDonough, 2005). As a consequence, school counselors in low-SES schools are spending significantly less time on college-related tasks (Kirst & Venezia, 2004), and finding it increasingly difficult to provide students with adequate college guidance (Corwin, Venegas, Oliverrez, & Colyar, 2004). Clinedinst et al. (2011), for instance, estimate that school counselors currently working in low-SES schools devote only 23 percent of their time to postsecondary admissions counseling, and are less likely to engage in proactive college-related activities like meeting with parents to discuss college planning, working with administrators to develop college-ready curricula, and representing students to college admissions officers. In the most comprehensive survey of school counselors to date, The College Board 2011a finds that only 3 in 10 school counselors believe they are successfully guiding their students through the postsecondary admissions process.

The increasing number of non-academic job tasks that “low-SES” counselors have been forced to take on has produced a college information void that low-SES schools are rarely compelled to fill (Perna, Rowan-Kenyon, Thomas, & Bell, 2008). Because they serve culturally diverse and relatively transient areas, where students are more likely to come from single-parent households, many low-SES schools lack the cohesive and mutually reinforcing networks of community support that schools in more affluent areas enjoy (J. C. Coleman, 1988), and which often moves or coerces high-SES schools to provide the personnel and coursework attendees need for future postsecondary success (McDonough, 1997).

In addition to community-based constraints, there are also structural constraints that prevent many low-SES schools from establishing a college-ready culture and curriculum. Currently, there exists a significant divide between the K-12 and postsecondary sectors—at both a policy and governance level. While postsecondary institutions are ideally suited to provide high school personnel with the information and training needed to improve college preparation, the separate finance and accountabil-

ity systems within which colleges and high schools operate provide little incentive for cross-sector dialogue or collaboration. K-12 institutions, for example, are currently charged with teaching a diverse pool of learners and are rewarded for their ability to educate all students. In contrast, and despite the remarkable diversity of institution types, colleges and universities are historically exclusive, increasingly focused on the acquisition of prestige (Toma, 2012), and as a consequence, see little to gain from aiding high schools, especially those serving low-SES students (Kirst & Usdan, 2009). While engaging low-SES high schools may bring public accolades to a college, or help a college fulfill its mission of service to society, it does not lead to increased status, which is earned primarily through enhanced selectivity and research production. Therefore, interaction between secondary and postsecondary institutions is sparse, and extensive dialogue usually occurs only in the context of high-achieving student recruitment—outside of low-SES communities, and in most cases, away from low-SES students (Domina & Ruzek, 2012).

Unfortunately, K-12 institutions rarely object to the lack of involvement and concern postsecondary institutions often exhibit with respect to college preparation and readiness. This is especially so in the case of low-SES high schools, many of which are too consumed with trying to meet their own measures of effectiveness and success, such as secondary graduate rates and performance on state assessment exams, neither of which accurately assess the college readiness of students (Conley, 2007). Perna and Thomas (2009), for instance, show that school counselors working in low-resource schools devote excessive time to coordinating standardized tests and to increasing exam pass rates—“thereby reducing the availability of counseling resources that are more directly related to college going” (p. 475).

Boswell (2000) asserts that the K-12 sector’s “system of uncoordinated tests and requirements can create significant barriers for students, particularly for poor and minority students who are most likely to come from high schools that do not

do a good job of preparing students for college success” (p. 5). Among the most significant barriers created is the barrier to accurate college-related information. Kirst and Venezia (2001) argue that providing clear and consistent information regarding college admissions is necessary to facilitating postsecondary transition, but that K-12 institutions are often ill-equipped to handle such a task:

“Signals (about the requirements for postsecondary entry) are especially important for students who are currently not exposed to high-level curricula or who do not receive information about college in a consistent manner from their parents, counselors, siblings, or teachers. Often, the task of preparing students for college falls entirely on the K-12 system, but it is ill suited to carry this burden alone. From our research, we found that few teachers, counselors, and administrators have much knowledge of college admission and placement policies. Without such knowledge, they cannot transmit accurate information to students” (p. 94).

The obstacles many disadvantaged students face with respect to securing college-related information and support may be reflected, at least in part, by the fact that only one-third of all low-SES high school attendees fulfill the minimum course and standardized test requirements needed to complete credit-bearing college coursework (Wyatt & Mattern, 2011), and that 50 percent all college attendees enroll in at least one remedial course (Attewell, Lavin, Domina, & Levey, 2006).

Given the above statistics and apparent relationship between college-related information and postsecondary enrollment, one might argue that policymakers, particularly at the state level, should promote greater cooperation between K-12 and postsecondary institutions. However, the finance and accountability systems of most states are not designed to compel or incentivize cross-sector collaboration (Venezia & Kirst, 2005). Currently, the majority of U.S. states have separate legislative structures governing their K-12 and postsecondary finance systems—with separate

leadership and political processes—and which rarely allow for budgeting across sectors (Domina & Ruzek, 2012). Additionally, only two states have clearly articulated P-16 accountability policies, and only five states have intentionally aligned high school assessments with postsecondary admissions and placement standards (Walsh, 2009). While at least 40 states have established councils to work on aligning K-16 practices, only three state councils have the ability to enact and implement policy (Weldon, 2009). According to Kirst and Usdan (2009), states' reluctance to endow councils with any real legislative authority suggests that achieving a seamless and integrated education system in the United States will not occur anytime soon.

“Given the escalating efforts to develop state educational structures that span the junctures from preschool to college, it appears that many states are recognizing the deep and abiding problems of this historical divide. Unfortunately, the evolution of these governance structures leaves unanswered the question of what types of state and regional structures will enhance K-16 deliberations, interaction, policy integration, and student outcomes. So far, no state has yet found a lasting way to facilitate deep interactions and linkages between K-12 schools and higher education. It is clear from this brief history that the divide between K-12 and higher education derives from long-lasting structural developments that are diverse and deep rooted, and that continue to separate the education levels today” (p. 21).

The evidence cited above clearly indicates that P-16 alignment is not a short-term solution to addressing the deficiencies in information that many low-SES students have regarding college admissions and postsecondary education in general. Until policymakers are willing and able to foster greater collaboration between education sectors, low-SES schools and their advocates may have to focus on providing greater

access to the professionals currently and primarily responsible for facilitating post-secondary access: school counselors. However, recent research into the training and role of school counselors begs the question: access to what?

McDonough (2005) notes that many school counselors working in low-income schools do not have sufficient knowledge of the college admissions and financial aid process, and as such, are not able to competently guide students in their transition from high school to postsecondary education. For example, while counselors are the most frequently cited source of financial aid information, especially for low income students (Terenzini, Cabrera, Bernal, et al., 2001), they are frequently uninformed about college costs (McDonough & Calderone, 2006) and can only answer the most basic questions about financial aid and financial planning for college (Burdman, 2005). According to a recent report conducted by the Project on Student Debt, nearly 40 percent of school counselors believe low-income students should avoid relying on student loans in order to fund their postsecondary pursuits. McDonough and Calderone (2006) note that due to their lack of knowledge regarding college affordability and financial aid, many counselors push low-income students toward community college even when such students are qualified to attend a four-year college, and even when four-year attendance may constitute a more affordable postsecondary option.

Some suggest that the lack of knowledge many school counselors exhibit with respect to college planning is due to insufficient professional training, and to a lack of graduate coursework in the area of postsecondary counseling—only 25 percent of high schools require their counselors to complete professional development in college advising, while the overwhelming majority of counselor education programs offer no coursework or practica devoted to college admissions and/or financial aid (Clinedinst et al., 2011; Savitz-Romer, 2012). Perna et al. (Perna, Rowan-Kenyon, Thomas, & Bell, 2008), for example, shows that many counselors avoid offering admissions-related advice to their students because they do not feel sufficiently trained in the

subject area. Others researchers argue that school counselors demonstrate deficiencies in college planning because they no longer see such work as beneficial or suitable to their occupational role. In two extensive qualitative studies examining counselor perceptions, Rosenbaum, Miller, and Krei (1996) and Krei and Rosenbaum (2001) reveal that many school counselors view college advising as a secondary, if not ineffectual job role. In particular, these researchers find that many counselors are unwilling to communicate harsh yet realistic information regarding their students' postsecondary prospects, partly because doing so goes against the authority and wishes of their often naively idealistic parents, and partly because such pragmatic advising is often in conflict with other professional objectives, such as promoting the mental and emotional health of students. Rosenbaum and colleagues find that instead of disseminating honest and useful advice, most counselors employ an overly vague "college for all" approach to admissions counseling, encouraging even the least able and least interested students to enroll in higher education while failing to alert them to other, equally viable postsecondary options like vocational training or employment in relatively high-paying industries that do not require a two-year or four-year degree. Rosenbaum et al. (1996) elaborate:

"When students approach counselors with unrealistic college plans or disappointments, counselors convert those situations into an opportunity for building self-esteem...many couch their advice in motivational platitudes that provide little or no information to the students" (p. 270).

Rosenbaum et al. believe that such a "soft and gentle" approach, as they refer to it, has devastating consequences for many students, especially those coming from low-income backgrounds.

"By avoiding the advising they once did, counselor are allowing some students to pursue a course for which they are unprepared and are permitting

them to leave high school unaware of their likely prospects...the near axiom in sociology that ‘low-income people always get hurt’ is no less true here...It is especially important for low-income students to gain information from counselors, because they are less likely to get the information at home or anywhere else” (p. 270).

While some counselors intimate their distaste for college advising by perfunctorily adhering to their college advising role, others appear to be more explicit in their aversion to the college-related aspects of their job. As recently as the 1990s, some counselors described college advising as elitist and not especially important to their occupational role (Avis, 1982; Cole, 1991); however, research supporting the feelings of dissatisfaction or resentment counselors may have regarding college advising is marginal at best, and possibly outdated. Clearly, there is a need for further investigation into how counselors—especially those working in low-SES schools—perceive and approach their postsecondary-related job duties (Holcomb-McCoy, 2010).

While there is some evidence suggesting that school counselors have lost faith in their ability to effectively engage in college planning, there is more consistent evidence showing that students have lost faith in the college planning abilities of their counselors. McDonough (2005) reveals that nine out ten students report not receiving sufficient college-related support from their counselors. Additionally, in a recent national survey of young adults (22 to 30 years old) with at least some postsecondary education, Johnson and Rochkind (2010) find that nearly two-thirds of all respondents rated their school counselors as doing a “fair” or “poor” job in guiding students through the college application process; and most respondents believed that teachers were more helpful in facilitating their postsecondary plans. Given these figures, it is also not surprising that 72 percent of respondents believed access to an advisor more educated about postsecondary planning would have helped them make better college-related and career-related decisions (Johnson & Rochkind, 2010).

It is also important to note that the aforementioned statistics do not account for students who failed to enroll in postsecondary education, and who may have had their postsecondary plans thwarted, at least in part, by an unknowledgeable and/or unavailable school counselor.

Despite substantial literature highlighting the lack of college counseling in America's schools, there is little research examining whether counselors really influence the postsecondary destinations of their students. Only a few studies have endeavored to examine if and how counselors improve postsecondary attendance. J. King (1996), for example, found that low-income students were more likely to attend a four-year college if they frequently met with a school counselor who encouraged and supported their attempts to enroll in college. In addition, Lapan, Gysbers, and Sun (1997) discovered that students attending high schools with fully implemented guidance counseling programs earned higher grades and received more college-related information—both of which help to improve one's chances of enrolling and persisting in postsecondary education.

However, in a comprehensive quantitative analysis of nationally representative data, A. F. Cabrera and La Nasa (2000) failed to find evidence that school counselors exert significant influence on the postsecondary enrollment and aspirations of socioeconomically disadvantaged students. Specifically, the researchers found that low-SES students were most likely to enroll in college if they had college-ready qualifications, early educational and occupational aspirations, knowledge about college, and parental encouragement and support. Given these results, Cabrera and LaNasa's lack of finding with respect to the influence of school counselors should not be cause for concern. Prior research shows that counselors mediate the impact of preparation, aspirations, college knowledge, and parental support—and as such—their influence may be subsumed within the effects of these other college enrollment predictors that the researchers find to be significant. For example, McDonough (1997) and Hossler

et al. (1999) found that counselors impact a student's educational progress and plans indirectly via providing their parents with college-related information and support. Indirect effects aside, other studies have managed to capture the direct effects that counseling has on the postsecondary enrollment patterns of students. Using data from NCES's National Educational Longitudinal Survey (NELS:1988), Plank and Jordan (2001) discovered that students receiving "guidance and help from school" were significantly more likely to attend a four-year college. However, it is important to note that the variable Plank and Jordan use to measure "guidance and help" does not explicitly cite school counselors as the only or even main source of such help. Consequently, teachers, administrators, and other school staff may also contribute to the significant effects that this particular variable has on a student's postsecondary enrollment prospects; however, given the job role of school counselors, one can assume that school counselors are a significant contributor to this variable's significance.

More recently, Bryan, Holcomb, Moore, and Day (2011) attempted to measure the impact that high school counseling has on the college application of students—a necessary and important precursor to college enrollment. The authors also used nationally representative data provided by NCES (ELS:2002), but unlike Plank and Jordan, incorporated variables that specifically focused on high school counselors. Employing multinomial logistic regression, the authors found that students who visited with their school counselor to discuss college plans were significantly more likely to apply to college. Additionally, the authors found that the number of school counselors working in a particular school was also positively and significantly associated with likelihood of college application.

Although the above cited studies support a positive relationship between counseling and college access, none examines—through appropriate statistical methods—whether school-based counselors, in particular, affect postsecondary enrollment specifically. To address this gap in research, the following dissertation focuses explicitly on

counselors and enrollment-related outcomes—at the individual- and school-level. It consists of two parts. Part One incorporates matching and multilevel, multinomial logistic regression to examine the relationship between student-counselor interaction and the likelihood of postsecondary enrollment. Second, given the de-emphasis of school-based college counseling in low-SES high schools especially, Part Two analyzes the influence of external interventions that aim to supplement the college-related work of school counselors, and in an era of tightening school budgets, are likely to become more widespread in the upcoming years. Specifically, Part Two employs difference-in-differences modeling to assess whether the National College Advising Corps, a relatively new and fast-growing, counseling-based organization, has increased the college-going rates of participating high schools. In sum, this two-part dissertation should illuminate whether traditional and new forms of school-based college counseling can improve postsecondary participation and help move individuals and society toward desired levels of educational attainment.

Chapter 3

Conceptual Framework

The theoretical perspectives outlined in Chapter 2 reveal a network of economic, social, and cultural assets that aid educational development and postsecondary choice, and without which, individuals are unlikely to enroll and succeed in college. Although many low-income students are unable to acquire sufficient college-related capital within their homes or communities, they may have opportunities to associate with other agents, particularly in their respective schools, who can direct them to the resources needed for postsecondary transition. Building on existing theory and evidence that highlights the important relationship between school personnel, social networks, and postsecondary choice (Engberg & Wolniak, 2010; McDonough, 1997; Perna, 2006), my conceptual framework is adapted, in part, from Perna's (2006) conceptual model of college choice, and identifies school-based counselors as a central institutional agent, and a potentially indispensable link in the college-going process—for low-SES populations specifically—and to which low-income students may connect for college guidance.

Figure 1 suggests that decisions related to college enrollment are situated within a social/cultural and school context, and are influenced by the resources and support that are specific to such contexts. In more advantaged circumstances, students may utilize their capital and connections to prepare for the academic rigors of higher education and to make college choices that properly account for both the costs and benefits of pursuing a postsecondary degree. In contrast, low-SES students rarely possess the financial, social, and/or cultural resources needed for college transition, and must often look to their respective schools for college-related support.

The dashed, double-headed arrows in Figure 1, which connect individuals to college-related capital (via their habituses) and to postsecondary networks, show that college-related communication may be weak or absent in low-SES settings. Since low-SES students often cannot rely on their families, friends and/or communities for college guidance, schools and school-based counselors become essential to the college-going process, and can provide the consistent link that low-SES students need to connect to college opportunities. The solid-double headed arrows in Figure 1 portray the potentially strong relationship between low-SES students, their counselors and postsecondary education.

Aside from assisting in the completion of college applications, school-based counselors can provide advice and support on various aspects of postsecondary transition, both before and after matriculation. A primary source of college-related information for low-SES students and their parents (Zarate & Gallimore, 2005), school counselors exert a positive influence on the college aspirations, college knowledge, and college readiness of low-SES populations (Adelman, 2006; McDonough, 2005; Muhammad, 2008). By virtue of their job role and professional training, and as depicted in Figure 1, school-based counselors have access to, and may capitalize on, a variety of postsecondary resources to provide college-related information and to aid the college plans of low-SES students. For example, in their role as college admissions gatekeeper and intermediary between secondary and postsecondary institutions (Rosenbaum et al., 1996), counselors can disseminate information about the system and processes that students must navigate in order to successfully transition into an affordable and appropriately selective college—this includes information about admissions standards, financial aid policies, and the credit requirements of particular majors and institutions, as well as other requirements and admissions-related or institution-specific attributes about which low-SES families and even other school personnel may know little. In this scenario, school-based counselors fulfill a “weak-tie” role by providing

low-SES students with the knowledge and support needed to prepare for, and transition into, postsecondary education and which would otherwise be unavailable (Kim & Schneider, 2005; McDonough, 2005; Plank & Jordan, 2001).

Of course, in order to “bridge” low-SES students to college, and especially to institutions that are commensurate with their credentials and talents, school-based counselors must be utilized. In contrast to Perna’s model, the model depicted in Figures 1 illustrates a reciprocal and interdependent relationship between student and school (as denoted by the double-headed arrows between habitus and school), and suggests that that a school’s resources and supports are not guaranteed, but earned by consent and by a readiness to engage with school personnel—attitudes of which are learned, and are motivated and molded by the family and community environment in which a student is raised (Simons-Morton & Chen, 2009). Consequently, and predictably, students vary in their ability to capitalize on school-based supports, as more advantaged students are more likely to use and benefit from a school’s existing offerings (Murray, 2009; Oyserman, Johnson, & James, 2011)—a finding that is perhaps reflected in the fact that low-SES populations are significantly less likely to seek out their counselor (Bryan, Holcomb-McCoy, Moore-Thomas, & Day-Vines, 2009). While it is clear that the college-related benefits of counseling can accrue only among “willing” participants, other research suggests that a disposition to counseling may not prove enough, especially for low-SES students.

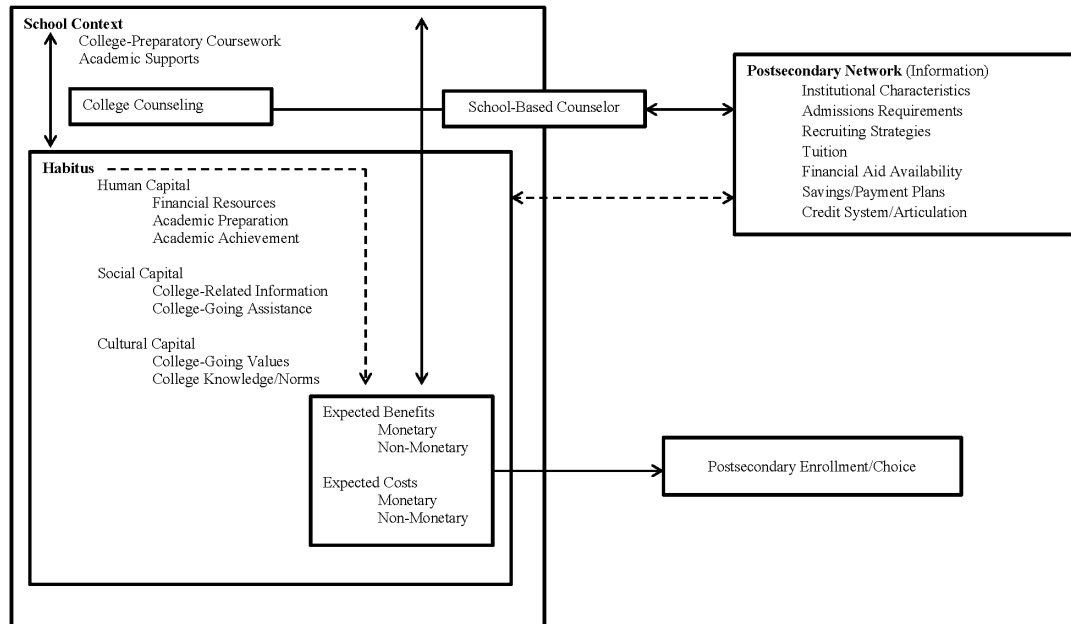


Figure 1. Conceptualizing postsecondary enrollment: low-SES students

Chapter 4

Part One

Although some evidence indicates that school counselors promote college knowledge and readiness, little research has been devoted to exploring the relationship between counseling and college enrollment specifically. Moreover, no studies have attempted to estimate the enrollment-related effects of counseling, while controlling for a student's predisposition to seek college-related advice. As such, Part One of this dissertation employs coarsened exact matching (CEM) and other bias-reducing techniques to examine whether visiting a school counselor for college-related information affects the likelihood of two postsecondary-related outcomes: (1) enrollment in postsecondary education in general; and (2) enrollment at a four-year institution. Specifically, I address the following research questions:

1. To what extent do students who visit their school counselor for college-related information have a greater likelihood of enrolling in postsecondary education, and at four-year institutions in particular?

2. To what extent do the effects of student-counselor visits vary by socioeconomic status?

Ultimately, this study aims to empirically validate prior research describing the positive influence that school counselors may have on the postsecondary trajectories of students. It also aims to generate results that account for the many contextual factors associated with college enrollment (Perna, 2006) and that consider the interdependent nature of the student-counselor relationship.

Methodology

Data

To answer the above research questions, I relied on data provided by the Educational Longitudinal Study of 2002 (ELS). From 2002 to 2006, NCES used ELS to biennially track the educational progress and transitions of a nationally representative sample of tenth grade students. In addition to including student-level data on academic performance, socioeconomic background, and postsecondary enrollment status, ELS also includes information on the high school experiences of respondents—particularly, and most pertinent to this study—their use of high school counseling services. The initial sample for this study included all ELS respondents—approximately 16,100 in total.¹ I then removed from the initial sample respondents who did not compare to at least one other respondent on several covariates that were likely to predict receipt of school-based college counseling.² The final analytic sample for this study included 11,260 students, and after weighting, represented 2,679,049 students attending approximately 23,500 high schools across the United States.

Variables

The dependent variable for this study is categorical and indicates the institutional level of the first college or university students attended as of 2006—the year immediately after respondents were presumed to have graduated from their respective high schools. The original ELS variable (F2PS1LVL) is re-categorized and respondents are classified as having enrolled at a four-year institution, a two-year institution, or as having not enrolled in postsecondary education.

In addition to my dependent variable, I include eleven independent variables

¹As explained below in the Analytic Design section, I employed full information maximum likelihood estimation, which allowed for the incorporation of all cases with data on at least one variable included in my model.

²See discussion on coarsened exact matching in the Analytic Design section.

that, according to prior research, also influence postsecondary enrollment. Numerous studies, for example, have found that academic achievement and ability are positively related to the likelihood of college (Adelman, 2006; Alon & Tienda, 2007). As such, I have included an “achievement” variable indicating students’ high school grade point average in all academic coursework from grades 9 through 12 (F1RAGP), as well as a composite variable indicating respondents’ scores on a math and reading standardized assessment administered by NCES during the base year (2002) of the ELS survey (BYTXCSTD).

In order to fully assess the college prospects of survey respondents, it is also necessary that I account for the academic intensity of their high school curriculum. Curricular intensity is increasingly acknowledged, by researchers and practitioners alike, as a consistent predictor of postsecondary performance (Attewell & Domina, 2008; Martinez & Klopott, 2005). Math course-taking, in particular, has been identified as the strongest predictor of success in college (Adelman, 2006; Conley, 2005; Zelkowski, 2010), and also shapes the postsecondary-related decision making of students (Eccles, Vida, & Barber, 2004; Zeldin, Britner, & Pajares, 2008). Therefore, I incorporate and subsequently re-categorize an ELS variable indicating the highest math course respondents have completed (F1HIMATH). ELS students are indicated as having not completed Algebra II (the “gateway course” to postsecondary success, according to Adelman (2006) and others), having completed Algebra II, or as having completed a higher level math course like Trigonometry Pre-calculus, or Calculus.

Aside from academic characteristics, I also account for students’ socioeconomic status (SES)—an important and consistent predictor of college enrollment (Hearn, 1991; McDonough, 1997; Walpole, 2003). Specifically, I use a SES composite variable featured in ELS:2002/2006 (BYSES1) and other NCES large-scale studies, and that is based on five equally weighted components of information provided by stu-

dents' parents via ELS's base year (2002) parent questionnaire (imputed otherwise): father's/guardian's highest level of education; mother's/guardian's highest level of education; family income; father's/guardian's occupation; and mother's/guardian's occupation. The SES composite variable is continuous, with higher calculated student SES scores assigned to students of higher socioeconomic status.

Like socioeconomic background, race also appears to be an important determinant of college enrollment, and is included as a covariate (BYRACE). Several studies show that underrepresented minorities, such as Hispanics and African-Americans, are less likely to enroll in postsecondary education (Freeman, 1997; Orfield, 1988). And if they do enroll, they are significantly more likely to attend two-year colleges, where retention and graduation rates are relatively low (Arbona & Nora, 2007; Karen, 2002). However, more recent studies show that underrepresented minorities are equally or more likely to attend colleges when other variables like parental education and curricular intensity are controlled for (Goldrick-Rab, 2006; Turley, 2009).

Findings regarding the impact of gender upon college access are even less consistent than that of race, but are nevertheless included in this study (BYSEX). While King (2000), Freeman (2004) and Goldrick-Rab (2006) show that females are more likely to enroll in college immediately after high school, others find that gender differences in postsecondary access diminish or disappear completely after SES (Bozick & DeLuca, 2005) and perceived returns to higher education (Beattie, 2002) are considered.

Regardless of their gender, race, or SES, students' postsecondary plans are also likely to be influenced by their educational expectations. Research has consistently demonstrated that students' college-related expectations, in particular, play an important role in determining whether students enroll at a postsecondary institution (Choy, 2001; Glick & White, 2004; Hossler & Gallagher, 1987). In order to

measure expectations relating to postsecondary education, I rely on an ELS variable indicating “how far a student thinks he/she will get in school” (BYSTEXP), which is subsequently coarsened into three distinct categories. Respondents are then classified according to whether they anticipate earning less than a four-year degree, earning a four-year degree, or earning a graduate degree.

Besides measuring the effects of student-level variables, I also account for elements of school context that are likely to mediate postsecondary enrollment patterns. For instance, in order to gauge the college-going environment at those schools from which survey respondents were sampled, I incorporate a school-level measure indicating the percentage of graduates enrolling at four-year institutions (F1A19A)—which has previously been shown to be a predictor of school-level capital and college enrollment behavior (Engberg & Wolniak, 2010; Perna, 2000). Moreover, given previous research demonstrating the positive relationship between lower high school class sizes and postsecondary enrollment (Hill, 2008), we also include a variable measuring the student-to-teacher ratio of each school included in the ELS survey.

In addition to learning environment and the availability of capital, school demographics and school sector have also been shown to influence college attendance. Coleman and Hoffer (1987), for example, found that private high schools more effectively facilitate postsecondary enrollment; while several studies reveal that schools with higher average SES are more likely to graduate relatively high proportions of postsecondary enrollees (Hill, 2008; McDonough, 1997). As such, variables indicating the control (BYSCTRL) and average SES of ELS:2002/2006 high schools are included in this study.

My primary independent variable (i.e., my variable of interest) is categorical and derived from two dichotomous variables featured in the ELS study, one indicating whether students visited their counselor for college-related information in tenth grade and the other indicating whether students visited their counselor for college-related

information in twelfth grade. ELS students are categorized as having visited their counselor in both grades, one grade only, or never.

Finally, this study also incorporated one interaction term to examine variations in counselor “effects” by socioeconomic status, and to determine whether low-SES students do indeed benefit most from their involvement with a school counselor, as prior research has suggested (Kim & Schneider, 2005; Plank & Jordan, 2001).

Analytic Design

In order to “tease out” the effects of my counselor-visit variable, it is necessary that I account for the endogeneity associated with counselor visitations. As discussed in my conceptual framework, students differ in their likelihood and ability to receive school-based counseling, and both observable and unobservable factors affecting a student’s decision to visit a counselor for college-related information are also likely to influence his or her decision to enroll in postsecondary education. For example, students with greater motivation or family support are more likely to attend college and visit their counselor. If this is indeed the case, and if I do not account for the correlation between these two postsecondary-related outcomes, any effect that I find with respect to counselor visitations may be spurious (Greene, 2011), and may be attributed to characteristics and/or circumstances that move one to enroll at a postsecondary institution *and* that are not accounted for by my model. As such, and in order to reduce the bias associated with my estimates, I must control for students’ propensity to obtain school-based college counseling. I can do so through two ways. First, I could locate or collect data that adequately measures variables currently omitted from my model (i.e. unobserved variables) and which predict counseling “treatment”; however, this option is unfeasible given time/resource constraints and given the lack of reliable instruments measuring latent traits like motivation and support. A second and more realistic option is to reduce and/or re-weight my analytic

sample such that counselees and non-counselees share (substantively) the same values on observed variables that predict their propensity to receive counseling—perhaps via a matching algorithm or technique. Ideally, and if I adequately “match” observations on a sufficient number of observed treatment predictors, I can argue that my analytic model compares counselees and non-counselees who are likely to compare on unobserved predictors of counseling. For example, if a particular matching algorithm yields pairs (or groups) of treated and non-treated students who share the same race, gender, academic record, family background, high school environment, etc., I can reasonably contend that such pairs are also likely to possess similar (not the same) motivation profiles, support structures, and other unobservable characteristics that influence their tendency to visit a counselor for college related information—which enables me to also contend that I have reduced (not eliminated) the bias associated with my “counseling” effect estimate. In order to ensure that counselees and non-counselees are fit for comparison and that my analytic design accounts for, and attempts to reduce, the endogeneity bias tied to my counselor-related variable, I employ coarsened exact matching (Iacus, King, & Porro, 2012).

Coarsened exact matching (CEM) is a relatively new, non-parametric method that controls for the confounding influence that pretreatment variables may have on the ability to produce unbiased effect estimates, specifically by reducing a sample to include only observations that compare on characteristics predictive of a treatment or intervention. Like other, more popular matching methods, CEM strives to establish covariate balance between treated and control units (i.e., observations). However, CEM is distinctive in that it does not require the researcher to construct a matching algorithm; instead CEM temporarily coarsens each k treatment-related variable into m substantively meaningful categories (the number of which is determined by the researcher and which is based on previously established theory and/or practice) and assigns units into one of $k_{m1} \times k_{m2} \times \dots \times k_{mn}$ strata, each of which is weighted according

to the number of treated and control units it contains. Observations within strata that do not contain at least one treated and control unit are zero-weighted and set aside, while observations within “matched” strata are subsequently uncoarsened and passed on for post-matching analysis. The cycle of coarsening and un-coarsening upon which CEM relies enables users to avoid the “curse of dimensionality” that effectively renders exact matching algorithms obsolete (Blackwell, Iacus, King, & Porro, 2009). For example, while exact matching (where matched observations share exactly the same value on all included covariates) produces perfect balance—in theory—the addition of one or more continuous variables to an exact matching algorithm usually prevents any two observations from being paired since any two observations are unlikely to share identical values on a continuous measure.

After CEM removes unmatched (i.e., incomparable) observations and a “matched” sample is produced, users apply statistical models to estimate the effect of a particular treatment—in this case, counseling: $TE_i = Y_i(1) - Y_i(0)$, where $Y_i(1)$ is the postsecondary enrollment status of an ELS respondent if he/she receives the “counseling” treatment and where $Y_i(0)$ is the postsecondary enrollment status of the same ELS respondent if he/she does not receive the “counseling” treatment. However, since the actual treatment effect is unobserved (observations either receive or do not receive treatment) and varies across units, CEM and other matching methods instead strive to estimate the sample average treatment effect on the treated (SATT) (Blackwell et al., 2009):

$$SATT = \frac{1}{n_T} \sum_{i \in T} TE_i \quad (1)$$

In the context of this study, CEM enables estimation of the SATT by ensuring that comparisons are made between counselees and non-counselees of similar backgrounds, academic records, postsecondary expectations and school environment, and who given their shared observed characteristics, are likely to compare on unob-

served characteristics that predict both treatment and outcome. While other matching techniques, like those using propensity scores (PSM) or Mahalanobis distances (MD), strive to produce similar comparisons, they do not offer the same statistical and methodological advantages that CEM offers. For one, CEM allows users to set, *ex ante*, the bounds within which matched comparisons are to be made, and consequently, to define the amount of covariate imbalance they are willing to tolerate. This makes certain that users restrict their analyses to a region of common empirical support and that they do not extrapolate beyond the comparable range of their data. For example, given a set of covariates that predict counselor visitations and postsecondary enrollment—such as sex, tested ability, and high school achievement—I can ensure that all matched observations belong to the same gender and share academic GPAs and standardized test scores that prior research treats or defines as comparable. Unfortunately, PSM and MD do not offer users the same assurances. For instance, PSM relies on model based procedures (usually a logit or probit function) and matches units that share similar scores, but that may also differ considerably one or more covariates included in the model—since units are matched on *predicted* probabilities of treatment, and not on their actual traits. PSM may also produce scores that incorporate observations existing within a region or sample space of extrapolation (i.e., propensity scores may be “tainted” by treated observations that do not contain a control counterpart, and vice versa). In both instances, estimates of a treatment effect are likely to be biased (Battistin & Chesher, 2004).

In addition to explicitly defining a multidimensional variable space within which units are to be assigned, CEM also allows users to analyze and improve balance for each variable in isolation, a procedure that is commonly referred to as Monotonic Imbalance Bounding (MIB) and which offer users a clear and decidedly effective course through which to reduce the statistical bias associated with their estimates (Iacus et al., 2012). Other matching methods that are not MIB (e.g., PSM and MD)

are designed to address a different and less concerning problem, namely large variance. However, attempts to maximize efficiency (via ensuring an adequately sized sample) often precludes users from achieving a desired level of covariate balance. This tradeoff is unfavorable, given that sample sizes are sufficiently large in many observational studies, particularly those which are conducive to matching, and also given that “it is generally not wise to obtain a very precise estimate of a drastically wrong quantity” (Rubin, 2006, 11). For example, in empirical applications, researchers often have to tweak and rerun PSM and Mahalanobis models to produce an accepted level of balance; however, model specifications that improve balance on one variable may reduce balance on another, leaving researchers guessing as to which matching algorithm produces the least bias. In contrast, CEM’s non-parametric properties enable researchers to define the value space within which units are to be matched—for each covariate separately and without influencing balance in any of the other included covariates—in effect, producing greater global balance, and consequently, less bias. As Rubin (2006) states: “the investigator should be more concerned about having an estimate with small bias than one with small variance” (p. 11).

Finally, since CEM operates within sample space and in the data space where \mathbf{X} is generated, users can make robust inferences without assuming anything about the data generating process. However, since PSM and Mahalanobis methods are model dependent (in that they reduce a covariate set from k -dimensional space to a more restricted space defined by a propensity score or Mahalanobis distance) causal inference is justifiable only under a certain set of unverifiable assumptions, namely that one’s model is correctly specified, of a correct functional form, and that propensity scores are constant across \mathbf{X} (Iacus & King, 2012). These assumptions often impose an insurmountable burden of proof upon a researcher who is attempting to defend the quasi-experimental design of his or her study.

Given its sound statistical properties, and its ability to outperform other matching methods in reducing imbalance, model dependency, estimation error and estimation variance (G. King, Nielsen, Coberly, Pope, & Wells, 2011), CEM is becoming an increasingly popular technique within many social science disciplines, and deserves greater attention from researchers within the field of education. While CEM is not a panacea for the deficiencies of observational studies—CEM (or any other matching technique) rarely produced a complete and perfectly matched sample, so covariates must still be incorporated into one’s analytical model to control for remaining differences—if done correctly, it can reduce (not eliminate) estimation bias. Ideally, CEM allows users to compare “apples with apples”—if not of the same shape, at least of the same color. Table 1 compares counselees and non-counselees on the variables included in my study, both before and after matching, and highlights the extent to which CEM improves covariate balance among the “treated” and control units within my sample.

Table 1: Weighted means: counselees vs. non-counselees

Variable	Min	Max	All ELS Respondents			Matched Respondents		
			Visit (None)	Visit (One)	Visit (Both)	Visit (None)	Visit (One)	Visit (Both)
<i>Student Level</i>								
SES	-2.11	1.98	-0.142	0.044	0.156	0.160	0.175	0.222
Asian	0	1	0.030	0.040	0.049	0.040	0.044	0.051
Black	0	1	0.146	0.139	0.121	0.101	0.126	0.098
Latino	0	1	0.188	0.140	0.113	0.119	0.123	0.099
Other	0	1	0.061	0.052	0.048	0.061	0.054	0.050
White	0	1	0.575	0.629	0.670	0.679	0.654	0.703
Female	0	1	0.443	0.521	0.571	0.562	0.520	0.582
Expectations ^a	0	2	0.918	1.294	1.468	1.369	1.294	1.419
GPA	0	4	2.248	2.656	2.879	2.803	2.796	2.876
Tested Ability	20.91	81.04	47.541	51.458	53.956	52.090	51.745	54.355
Math Level ^b	0	2	0.863	1.230	1.434	1.148	1.118	1.280
<i>School Level</i>								
Private Control	1	2	1.190	1.119	1.200	1.082	1.078	1.091
School SES (Mean)	-1.023	1.439	-0.092	0.012	0.028	-0.001	0.014	0.022
% Four-Year ^c	1	4	2.303	2.569	2.596	2.454	2.428	2.533
Student-Teach. Ratio	4.65	54.17	15.311	14.769	15.073	14.762	14.741	14.980
N			4,850	6,440	3,470	3,190	4,720	2,800
N (Weighted)			971,518	1,324,477	719,287	917,707	1,109,449	614,474

^a 0 = less than a four-year degree; 1 = four-year degree; 2 = graduate degree

^b 0 = less than Algebra II; 1 = Algebra II; 2 = Trigonometry or higher

^c 1 = 0-24%; 2 = 25-49%; 3 = 50-74%; 4 = 75-100%

After preprocessing my data via CEM, I use a two-level generalized linear model to increase the accuracy and efficiency of my parameter estimates, and to identify significant student- and school-based predictors of postsecondary enrollment. Luke (2004), Raudenbush and Bryk (2002) and others argue that individual-level regression models are inappropriate when examining institution-level effects and when a significant proportion of variance in the dependent variable is explained by differences between the groups or clusters of a sample. In order to assess the need for a multilevel approach, I construct a fully unconditional model with no predictor variables. In the unconditional model—alternatively referred to as the null or one-way ANOVA model—the intercept is allowed to vary, thereby dividing the variance of the dependent variable (enrollment level) into a within- and between-school component.

I subsequently use these parameters to compute design effects for each of the response categories in my model, all of which yielded a value of greater than $D_{eff} = 2$ —which suggests that a multilevel structure is indeed needed, especially given the complex sampling procedures inherent in the ELS study (Muthen & Satorra, 1995).

The two-level model incorporated into this study employs a multinomial logit link and allows only the regression coefficients for the intercept to vary across schools; all other school- and student-level effects are assumed equal across clusters (i.e., schools). I employ a multinomial function—which is suitable both for estimating categorical outcomes (Hosmer & Lemeshow, 1989) and for the study of postsecondary enrollment (A. Cabrera, 1994)—in order to distinguish the differing influences that school counseling may have on enrollment at two-year and four-year institutions, respectively. This distinction is important, especially given the varying degree and professional pathways of “two-year” and “four-year” students. I also distinguish between two-year and four-year postsecondary enrollment, because I anticipate that the counselor-related variables detailed above will be more strongly and more positively associated with enrollment at four-year institutions. The application process at four-year colleges and universities is significantly more rigorous than that at two-year colleges, and demands significantly more preparation and work on the part of students. As such, soliciting the help of a school counselor may have a greater impact on the admissions prospects of “four-year” students than those of “two-year” students. Formally, the two-level model is expressed as:

$$\eta_{mij} = \mu_j + \alpha(\text{Counselor Visits})_{ij} + \beta(\text{SES})_{ij} + \delta(\text{Counselor Visits} * \text{SES})_{ij} + \gamma\mathbf{X}_{ij} \quad (2)$$

$$\mu_j = \mu + \gamma\mathbf{X}_j + \epsilon_j \quad (3)$$

where η_{mij} is the log odds of particular enrollment outcome, compared to the log odds of the base outcome in the model π_{miJ} , no enrollment in postsecondary education; μ_j indicates the random intercepts that vary over high school j ; α_{ij} and β_{ij} represent individual-level effects for counselor visits (regarding college) and SES, respectively; δ interacts the variables for counselor visits and SES, and indicates whether the effects of school-based college counseling vary by socioeconomic status; and \mathbf{X}_{ij} and \mathbf{X}_j are vectors of the covariates detailed above.

In order for the above model to yield accurate results, it is necessary that I adopt an estimation or ad-hoc procedure that accounts for the missing data within my sample. Estimating my model without accounting for missingness within the ELS data resulted in the deletion of 18 percent of my analytic sample. According to Allison (2002), complete case methods (i.e., methods incorporating listwise deletion) that substantially reduce sample size are likely to produce bias and inefficient parameter estimates. Assuming data are missing at random (MAR) (i.e., the probability of missingness on \mathbf{Y} is related to \mathbf{X} , but not to \mathbf{Y} —this differs from missing completely at random (MCAR), where the probability of missingness on \mathbf{Y} is unrelated to both \mathbf{X} and \mathbf{Y}), current methodological research recommends that I employ either multiple imputation (MI) or full-information maximum likelihood (FIML) to correct for the bias that would otherwise result from complete case analysis—both approaches are considered current “state of the art”(Schafer & Graham, 2002). Provided certain assumptions, namely that the data are distributed multivariate normal and are not missing not at random (MNAR) (i.e., the probability of missingness on \mathbf{Y} is related to \mathbf{Y} itself), both MI and FIML yield consistent, asymptotically normal and efficient estimates; however, the validity of MI also assumes that imputation models are correctly specified and are “congenial” with subsequent analytical models (e.g., analytical models that include interaction terms or transformed variables must rely on imputation models that include the same interactions/transformations) (Rubin, 1996; Treiman, 2009); unfortunately, both assumptions are easily and quite frequently violated in practical applications (Allison, 2000). As such, FIML is increasingly becoming a preferred method of choice for handling missing data (Allison, 2012; Baraldi & Enders, 2010; Raykov & Marcoulides, 2010) and it is the missing data approach that I choose to adopt in this study.

In FIML, estimation is based on all observed data, so discarding incomplete observations is not necessary; FIML simply uses a reduced form of the multivariate

distribution for cases with missing data, thereby allowing all cases (with at least one data point) to contribute to the maximum likelihood function (i.e. the function used to find parameter estimates that are most likely, given the data). Put more explicitly, and to utilize an example from Peugh and Enders (2004), suppose our objective is to estimate a covariance matrix and vector of means used to provide regression estimates. In order to do so, the FIML estimator maximizes the following log-likelihood function for each observation in a particular sample:

$$\log L_i = K_i - \frac{1}{2} \log |\Sigma_i| - \frac{1}{2} (x_i - \mu_i)^\top \Sigma_i^{-1} (x_i - \mu_i) \quad (4)$$

Where K_i is a constant indicating the number of complete data points for observation i , x_i is the observed data for observation i ; μ_i and Σ_i are parameter estimates for the mean vector and covariance matrix, respectively, and the size of which are determined by the number of variables on which a particular observation has complete data—as denoted by the subscripts i in the above equation. The likelihood functions for each observation are then summed across the entire sample and maximized according to the following:

$$\log L(\mu, \Sigma) = \sum_{i=1}^N \log L_i \quad (5)$$

For example, in a case where the objective is to predict standardized test scores as a function of gender, race, and high school GPA, observations (i.e., students) with complete data contribute the following case-specific arrays into the sample log-likelihood function:

$$X_i = \begin{bmatrix} X_{i,\text{Gender}} & X_{i,\text{Race}} & X_{i,\text{GPA}} \end{bmatrix}; \mu_i = \begin{bmatrix} \mu_{\text{Gender}} \\ \mu_{\text{Race}} \\ \mu_{\text{GPA}} \end{bmatrix}; \Sigma_i = \begin{bmatrix} \sigma_{\text{Gender}}^2 & \sigma_{\text{Gender, Race}} & \sigma_{\text{Gender, GPA}} \\ \sigma_{\text{Race, Gender}} & \sigma_{\text{Race}}^2 & \sigma_{\text{Race, GPA}} \\ \sigma_{\text{GPA, Gender}} & \sigma_{\text{GPA, Race}} & \sigma_{\text{GPA}}^2 \end{bmatrix}$$

Whereas observations with missing data on high school GPA, for instance, contribute a reduced variation of the above:

$$X_i = \begin{bmatrix} X_{i,\text{Gender}} & X_{i,\text{Race}} \end{bmatrix}; \mu_i = \begin{bmatrix} \mu_{\text{Gender}} \\ \mu_{\text{Race}} \end{bmatrix}; \Sigma_i = \begin{bmatrix} \sigma_{\text{Gender}}^2 & \sigma_{\text{Gender, Race}} \\ \sigma_{\text{Race, Gender}} & \sigma_{\text{Race}}^2 \end{bmatrix}$$

As evident from the above, FIML uses all available data during parameter estimation. Additionally, and perhaps not quite as apparent, all cases, even those with incomplete data, contribute to the estimation of every parameter in the model (Peugh & Enders, 2004). For example, in a trivariate model, where X and Y predict Z, observations with X and Y, but not Z, still contribute to the estimation of Z, since the estimation of Z is, in part, a function of the covariance between X and Y. In other words, likely values of Z are implied by observed values of X and Y; so, even if observations are missing values on Z, their values of X and Y can still contribute to the estimation of Z, while also improving the precision and efficiency of the Z estimate (since N increases and more information is incorporated into the model). This is conceptually analogous to what occurs during multiple imputation; however, data are not actually imputed in FIML estimation, and so there is no risk of estimating a model on the basis of unlikely values that could have been produced via an improperly specified imputation model.

Finally, it is important to note that while the normal distribution plays an essential role in maximum likelihood estimation, FIML is quite robust in the presence of non-normal data (Enders, 2001; Raykov, 2012). However, in models with highly discrete dependent variables, such as the one used in this study, FIML may lead to bias standard errors. As a corrective measure, and based on the recommendation of Enders (Enders, 2010), I incorporate a robust weighted least squares estimator (White, 1980) into my analysis.

In addition to accounting for missing data, I also have to account for the complex and multistage sampling procedures used to generate the ELS sample; otherwise my model is likely to yield underestimated standard errors (Thomas & Heck, 2001). As such, I incorporate variables indicating the stratum and cluster to which each observation belongs, as well as student-level and school-level sampling weights, the former of which are scaled in order to reduce bias and improve the efficiency of my estimates (Rabe-Hesketh & Skrondal, 2006).

After controlling for missing data and for the complexity of the ELS sample, I estimate my model and analyze the resulting multinomial coefficients in order to determine whether student-counselor visits have a positive and significant influence on enrollment at two-year and four-year institutions. Given a significant interaction effect between counselor visits and socioeconomic status, I also analyze linear combinations of my main-effect and interaction terms in order to determine at which levels of socioeconomic status the effects of counseling are significant and at their greatest.

Finally, I generate predicted probabilities in order to compare the likelihood of postsecondary enrollment among students who possess similar SES scores, but different values on the counselor-visit indicator. Long and Freese (2006) and others assert that effect sizes are hard to interpret given only a set of logit coefficients and/or odds ratios, and suggest using predicted probabilities as a means through which to communicate results, especially within the context of a multinomial model.

In order to assess model fit, I rely upon a measure indicating the proportional reduction in error (PRE), which compares predicted outcomes generated by the model against observed outcomes in the data. A model with a “good” (PRE) statistic is one that effects a substantial reduction in the percentage of outcomes predicted incorrectly by the “null model” (i.e. a model that chooses the modal category every time). However, it is important to note that PRE is not a completely reliable measure, especially for multinomial outcomes, since multinomial models are more likely than

other categorical models to assign most or all observations to one category (Bakker, 2008). Unfortunately, adequate scalar measures summarizing the overall goodness of fit for models with categorical outcomes have not yet been developed. As J. Long and Freese (2006) state: “there is no convincing evidence that selecting a (categorical) model that maximizes the value of a given measure results is a model that is optimal in any senses other than the model’s having a larger (or, in some instances, smaller) value of that measure” (p. 104).

Limitations

While the inability to sufficiently assess model fit could be cited as one limitation of this study (and any other study that relies on a categorical dependent variable), other limitations are more explicit and worth noting. There are several limitations of potential consequence in this study, which relate to my sample and model, respectively. First, in the course of matching and in order to ensure that I did not extrapolate beyond the comparable range of my data, I was forced to eliminate 16 percent of the treated units in my sample. Although constituting a relatively small proportion of the treated sample population, these excluded units precluded me from generalizing my results to the entire sample. In other words, estimates related to counselor visitations (presented below) were indicative of the local SATT and could not be attributed to sample observations for which there were no appropriate matches. To test the sensitivity of my findings, and as recommended by Iacus et al. (2012), I partitioned the treated units that were matched, m_t , from from the entire population of treated units, n_t , and then estimated the treatment effect for the unmatched sample via estimating the same generalized linear model that I applied to my matched sample. Finally, I calculated the global SATT estimate as a weighted combination of the two treatment-related coefficients:

$$\hat{\tau}_{nT} = \frac{\hat{\tau}_{mT} \cdot m_T + \hat{\tau}_{nT-mT} \cdot (n_T - m_T)}{n_T} \quad (6)$$

where $\hat{\tau}_{mT}$ indicates the estimated effect of my counselor-visit variable for matched, treated units, m_T and where $\hat{\tau}_{nT-mT}$ indicates the estimated effect of my counselor-visit variable for unmatched, treated units.

Interestingly, the effect sizes yielded from the above model were actually greater than those generated within the local SATT; however, my substantive findings (discussed below) remained the same.

Despite consistencies between the matched and unmatched treated units in my sample, it is important to note that effect estimates generated from my model may still contain bias, particularly given the data preprocessing and analytic techniques I use, which although appropriate and advantageous, are not perfect. For one, and as indicated previously, CEM and other similar techniques can match only on *observed* variables. Although matching on background, achievement, ability and expectations may have produced an analytic sample where counselees and non-counselees share similar unobserved characteristics—unobservable traits like motivation, for instance, are arguably reflected in, and a reflection of, grades, test scores, SES, etc.—there was not a perfectly reliable way to account (entirely) for influential variables that that were not included in the ELS dataset. As such, analyses employing CEM, or matching of any type, may still produce biased effect estimates, and in the context of this study, may have failed to fully distinguish the effects of counseling from the effects of other attributes or circumstances that lead one to visit a counselor, but that also move one to enroll in postsecondary education.

Second, given issues related to non-response, I employed FIML, which relies on the assumption that data are missing at random (MAR). While inclusive analysis strategies (IAS)—in particular, checking for consistency between estimates in my final model and an alternative model including additional, auxiliary variables that

were “predictive” of missing values (see Panter and Sterba (2011) for more detail about IAS)—improved the chances that my data and analysis exhibited an MAR mechanism, there is no statistical test currently available which can confirm that this was in fact the case (Raykov & Marcoulides, 2008). Encouragingly, however, more recent research suggests that MAR-based methods, like FIML and MI, do have at least some robustness against violation of the MAR assumption (Enders, 2010).

A third limitation associated with my study revolves around the assumption on which my model and all other multinomial models are based. The assumption of independence of irrelevant alternatives (IIA) dictates that multinomial models are appropriate only in the context of independent choice or outcome sets, in which the odds of realizing one outcome, versus another, do not depend on the addition (or subtraction) of another potential outcome. For example, in the case of postsecondary enrollment, IIA assumes that the odds of enrolling at a four-year institution, compared with those of enrolling at a two-year institution, will remain the same regardless of whether I remove an alternative outcome from my original outcome set (e.g., no enrollment) or whether I introduce a new potential outcome (e.g., enrollment in the military). Long (1997) cites two statistical tests commonly used to evaluate IIA: Hausman and McFadden (1984) and Small and Hsiao (1985); however, Long and others, like Cheng and Long (2007), reveal that despite being the best available tests of IIA, both Hausman-McFadden (HM) and Small-Hsiao (SH) exhibit poor statistical properties and “are not useful for assessing violations of the IIA property” (Long & Freese, 2006, 243). Long proceeds to argue that “the best advice regarding IIA goes back to an earlier statement by McFadden (1973), who wrote that multinomial models should be used only in cases where the alternatives ‘can plausibly be assumed to be distinct and weighted independently in the eyes of each decision of each decision maker’” (p. 243). While both HM and SH yielded significant test statistics in this study—and may accurately indicate a violation of the IIA property, since recent evi-

dence suggests that many college-qualified students from disadvantaged backgrounds limit their postsecondary choice set to a two-year college or no college at all (Roderick, Nagaoka, Coca, & Moeller, 2009)—I still judged the use of a multinomial model to be appropriate, given that each of the outcome categories (i.e. enrollment outcomes) are conceptually and practically distinct, and have been treated by higher education researchers as such (Engberg & Wolniak, 2010; Hill, 2008; Kim & Schneider, 2005).

Finally, a fourth limitation of this study results from the dichotomous nature of the counselor-related variables in the ELS survey. While analysis of the counselor-visit variables described above can uncover whether school-based college counseling has a positive effect on the likelihood of postsecondary enrollment, it cannot explain how or why such an effect arises. Ideally, ELS would include additional variables detailing the size and scope of high school counseling departments, as well as the college-based activities of individual counselors. Interestingly, the High School Longitudinal Study of 2009 (HSL:09), which is also administered by NCES, attempts to improve upon ELS by including these exact variables; however, individual-level data will not become available until 2015, and preliminary analysis of the data that is currently available, which is school-specific and provides information on whether counseling departments at sampled high schools engage in certain college-related activities, show that counseling departments exhibit very little variation in their responses to HSL:09 survey questions, most of which are also dichotomous. For instance, more than 95 percent of the school administrators surveyed in HSL:09 answered “Yes” to questions asking whether their respective counseling departments participated in college fairs, consulted with postsecondary representatives, helped students complete financial aid applications, and organized college related information sessions for students and their families. However, recent qualitative studies into the condition of counseling at schools of varying wealth and socioeconomic status—all of which appear to provide a more complete and encompassing picture of the college counseling

landscape—show that the majority of counseling departments, at low-SES schools especially, do not adequately engage in the aforementioned activities and that there is great variation in the quantity and quality of college-related activities that are provided (McDonough, 1997; Perna, Rowan-Kenyon, Thomas, & Bell, 2008; Perna & Thomas, 2009). Although statistics on school-based college counseling are significantly limited, certain counselor-related data can still be leveraged to shed light on the relationship between counseling and postsecondary enrollment, particularly if there is sufficient variation within such data (as is the case with the ELS variables used in this study) and if proper controls are instituted. Ultimately, my study attempts to reveal what no qualitative study can: that, *ceteris paribus*, school-based college counseling does have an effect on the postsecondary trajectories of students, and that effects are greatest for students who are least likely to have access to the individuals and resources needed for postsecondary access. In doing so, I hope that my study encourages qualitative researchers to uncover what no quantitative study can (at least currently, given available data): namely, the types of counselors and counseling activities that are most conducive to facilitating postsecondary transition for disadvantaged students especially.

Results

Table 2 details results from the full multinomial model. Statistical significance is indicated by asterisks next to the coefficients. As expected, variables relating to students' background were significantly associated with the probability of enrolling in postsecondary education. In particular, and in accord with previous research (Walpole, 2003), students of higher socioeconomic status were more likely to enroll at two-year and four-year institutions (vs. two-year enrollment and no enrollment) than students of lower SES status.

Additionally, race was also related to postsecondary attendance. After controlling for other variables that influenced college-going, African-Americans and Hispanics were significantly more likely to enroll at a four-year institution than their White counterparts—a finding that, despite being unanticipated to some, conformed to the findings of more recent studies exploring the relationship between race and college enrollment (Goldrick-Rab, 2006; Turley, 2009).

In contrast to race and socioeconomic status, gender did not appear to influence the likelihood of postsecondary enrollment, particularly after other background factors were controlled for. This finding was consistent with other studies suggesting that the gender gap in postsecondary enrollment is not necessarily due to gender itself, but due to other factors that affect how males and females perceive a college education and prepare for the rigors of a postsecondary setting (Beattie, 2002; Bozick & DeLuca, 2005).

While certain demographics appear to influence the probability of postsecondary enrollment, the results in Table 2 indicate that academic ability and achievement may have played a greater and more consistent role in determining the postsecondary destinations of students.

Students earning higher grade point averages and standardized test scores, and who complete higher-level math courses, were significantly more likely to enroll in postsecondary education and at four-year institutions (vs. no enrollment and enrolling at two-year institutions). These results were unsurprising and supported research previously cited in this paper, which demonstrated the strong association between high school performance and postsecondary enrollment.

Like academic performance, student expectations also appeared to have a particularly strong influence on postsecondary enrollment, as students with plans to earn a four-year degree or higher possess a greater likelihood of enrolling in postsecondary

education, and at four-year institutions, than students who expected to earn less than a four-year degree. These results were also anticipated given past research.

Table 2: Estimating the likelihood of postsecondary enrollment

Variable	2-Year vs. No	4-Year vs. No	4-Year vs. 2-year
<i>Student-Level Variables</i>			
Counselor Visit^a			
One Grade	0.343***	0.594***	0.251*
Both Grades	0.643***	0.973***	0.331**
Counselor Visit × SES			
One Grade × SES	-0.341*	-0.460**	-0.116
Both Grades × SES	-0.583***	-0.659***	-0.133
SES	0.743***	1.234***	0.488***
Race^a			
Black	0.191	1.273***	1.086***
Latino	0.279*	0.673***	0.392**
Asian	0.774***	1.044***	0.272***
Other	-0.393*	0.155	0.557**
Gender^a			
Female	0.112	0.025	-0.090
High School GPA	0.677***	1.528***	0.853***
Standardized Test Score	0.007	0.054***	0.047***
Math Level^a			
Algebra II	0.393***	0.778***	0.388**
Trigonometry or Higher	0.389***	1.480***	1.092***
Expectations^a			
Four-Year Degree	0.240*	0.797***	0.555***
Graduate Degree	0.434***	1.161***	0.726***
<i>School-Level Variables</i>			
Control^a			
Private	0.510***	0.498**	-0.009
Student-to-Teacher Ratio	0.011	0.003	-0.008
Mean SES	0.351*	0.645***	0.303*
% Students attending 4-year colleges	0.022	0.283***	0.261***
Number of Obs. (Unweighted)	11,260		
Student Population (Weighted)	2,679,049		
PRE (Proportional Reduction in Error)	.3302		

Note. From ELS:2002/2006 Restricted Data.

^aReference Categories in Order: Never; White; Male; Less than Algebra II; Less than a four-year degree; Public

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

In addition to student-level variables, certain school-level indicators were also related to likelihood of postsecondary enrollment. In particular, a school's mean

socioeconomic status was positively associated with the the likelihood of enrolling in postsecondary education and at a four-year institution, as was the percentage of a high school’s graduates attending four-year institutions. Attending a private high school also appeared to improves students’ likelihood enrolling at a two-year or four-year institution versus no enrollment specifically. Each of these findings is in accord with the most recent research on the relationship between high school context and postsecondary enrollment (Engberg & Wolniak, 2010; Hill, 2008).

Surprisingly, a commonly used indicator of academic environment, a school’s student-to-teacher ratio, was not significantly related to the likelihood of enrollment—a finding that contradicts Hill (2008), who relied on older data from the National Educational Longitudinal Study (NELS:88-94), but is consistent with the findings of Engberg and Wolniak’s (2010) more recent analysis, which also relied on ELS data.

In contrast, student-counselor interaction did exert significant influence on college attendance. As hypothesized, students who visit their counselor for college-related information appear more likely to enroll in postsecondary education and at four year institutions in particular, at least on average. The significant interaction terms in the above table suggest that the influence of school-based college counseling did vary on the basis of socioeconomic status, and that students of lower socioeconomic status may have yielded more benefit from their relationship with a school counselor.

Interestingly, Figure 2 shows that effect sizes related to student-counselor visits were greatest for students at lower ends of the socioeconomic scale, and that “mid-to-high” SES students experienced little to no gains in the likelihood of two-year or four-year enrollment as a result of their interactions with a counselor.³ Linear hypothesis tests after estimation also showed that low-SES students visiting their counselor in both grades were more likely to enroll at four-year institutions (vs. two

³The vertical arrows in each graph indicates at which SES “score” the effect of student counselor visits becomes statistically indistinguishable from zero.

year enrollment and no enrollment) than students who visited their counselor in one grade only.

In addition to exhibiting a varying effect on the likelihood of postsecondary enrollment, student-counselor visits also appeared to have a varying effect on the probability of postsecondary enrollment, though variation is limited to one type of enrollment outcome. Figures 3 and 4 present, respectively, predicted probabilities of enrollment at a four-year institution and anywhere (i.e., at a two- or four-year institution). Probabilities were sorted by socioeconomic status and all variables in the model—except the interaction term and main effect variables for SES and counselor visits—were held constant at their respective means.

As indicated below, Figure 3 reveals a fairly uniform, yet significant⁴, effect of counseling on the probability of four year enrollment, meaning that the significant interaction term in the four-year enrollment vs. no enrollment comparison category was due to a decrease in the probability of no enrollment, rather than an increase in the probability of four-year enrollment, for counselees specifically.⁵

⁴Confidence intervals calculated for the predicted probabilities confirm that this is the case.

⁵When discussing results generated by a multinomial model, or other models employing maximum likelihood estimation, it is important not to confuse likelihood with probability. For example, and in the context of this study, a significant interaction between student-counselor visits and socioeconomic status indicated varying effect sizes with respect to the odds of one outcome compared to another—for example, four-year enrollment versus no enrollment—but it does not necessarily indicate varying effect sizes with respect to the probability of four-year enrollment overall.

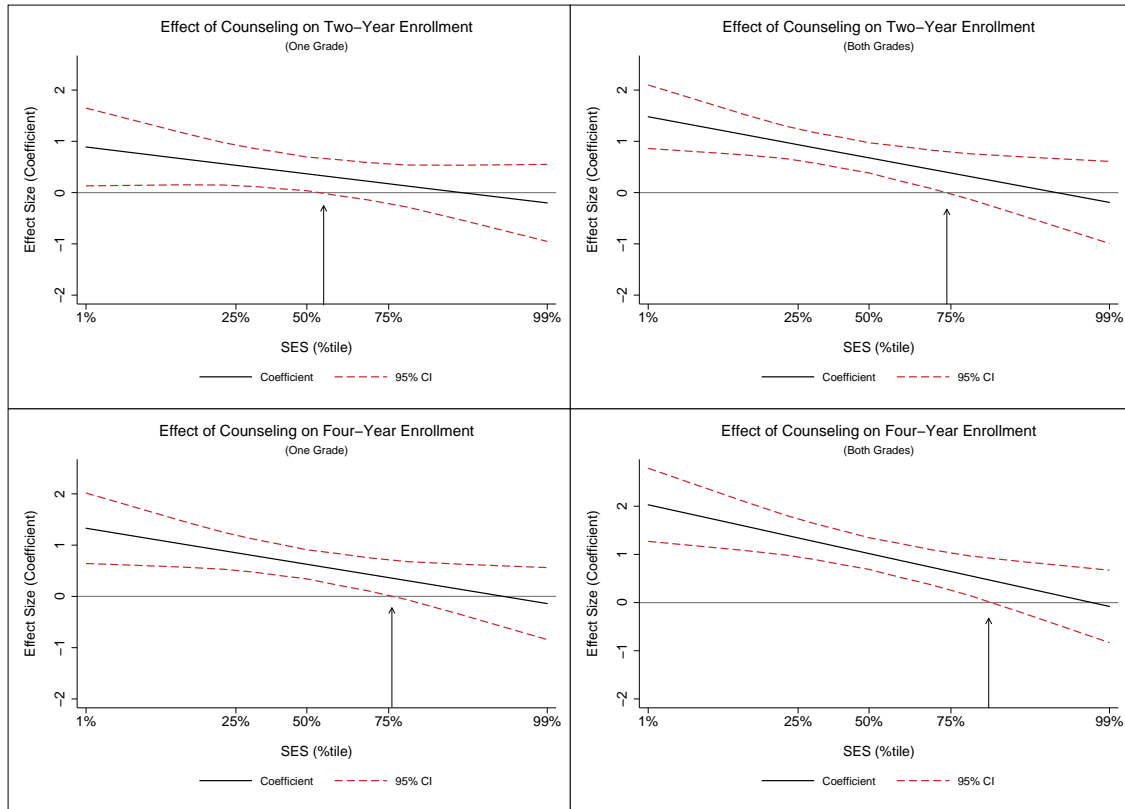


Figure 2. Effects of counseling by SES

In contrast, Figure 4 reveals that effect sizes on probability of postsecondary enrollment anywhere varied considerably, and that low-SES counsees experienced a much larger increase in the probability of enrollment—nearly twofold in some instances—than did counsees of higher socioeconomic backgrounds.⁶

In sum, Figures 3 and 4 indicate that variation in the effects of counseling, by socioeconomic status, revolved around college attendance in general, rather than enrollment at a specific institutional level. In other words, Figures 3 and 4 suggest that school-based college counseling did improve the probability of four-year enrollment among low-SES populations, but that unique benefits accrued only in the context of

⁶Additionally, and although not pictured in Figure 5 (to preserve clarity of presentation), it is important to note that confidence intervals for predicted probabilities among counsees and non-counsees begin to overlap between the 35th and 40th percentiles of SES “score”, suggesting no significant effects of counselor-visits at higher ends of the socioeconomic scale—at least when it came to the probability of enrolling in postsecondary education anywhere.

whether low-SES students enrolled in postsecondary education, and not where they enrolled.

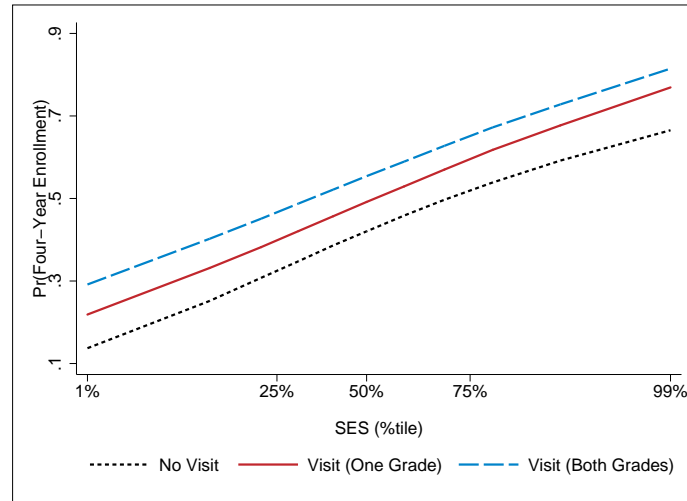


Figure 3. Probability of four-year enrollment (by SES and visits)

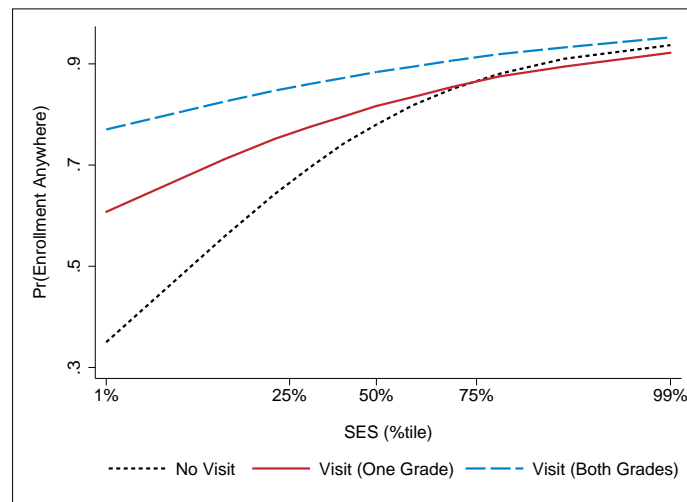


Figure 4. Probability of enrollment anywhere (by SES and visits)

Discussion

Students from low socioeconomic backgrounds often times lack not only the resources, but the information and support needed to enroll and succeed in post-secondary education (McDonough, 2005; Tierney & Venegas, 2009). More often

than not, they live in homes, reside in communities, and attend schools where college-going is not the norm and where few adults, let alone adult educators, understand the prerequisites to, and benefits of, a postsecondary education. Consequently, many academically capable, yet disadvantaged students continue to bypass college, while many policymakers continue to lament disparities in college enrollment and the impending shortage of college-educated workers in this country.

In order to meaningfully and substantially improving college participation in the United States, policymakers and other stakeholders will likely need to influence more low-SES students to pursue higher education (Lee, Edwards, Menson, & Rawls, 2011). It is these students on which the United States' continued prosperity and competitiveness may depend, and it is within this demographic where the most gains are to be made.

As indicated previously, Part One of this dissertation aimed to examine the relationship between school-based college counseling and the likelihood of postsecondary enrollment, and to determine whether the effects of such counseling varied across socioeconomic groups. Encouragingly, my analysis revealed school-based counseling as making a distinct and substantial contribution to the college enrollment and destinations of low-SES populations especially. Moreover, it suggests that committing additional time and resources to the provision of school-based college counseling may narrow the college participation gap—in particular, by improving enrollment rates among low-SES students, and by moving higher proportions of low-SES students to enroll in four-year institutions, where their prospects for degree completion are comparatively higher (Doyle, 2009; B. Long & Kurlaender, 2009).

In their role as educator, academic advisor, and intermediary between secondary and postsecondary institutions, school counselors are uniquely situated to guide students through an increasingly complex college transition process (Bryan et al., 2011), as this study suggests; however, in order to actually “bridge” low-SES students to

postsecondary education, and especially to institutions that are commensurate with their credentials and talents, school counselors must be able to effectively and sufficiently engage in postsecondary planning.

As the above literature review indicates, many low-SES students attend high schools where they have little to no interaction with a high school counselor. Despite substantial literature highlighting the lack of college guidance, particularly in low-SES schools, and other research revealing a growing desire for college-related mentorship and advice, there has been little effort to improve the competencies and availability of school-based college counselors. At present, the condition of school counselors and college guidance in America's high schools is not an issue of importance on any major policy agenda, and is consistently absent from national- and state-level discussions on education reform (Bridgeland & Bruce, 2011; McDonough, 2005). Only California has recently committed to the expansion of school counseling services, and that was to reduce outrageously high student-to-counselor ratios within the state (960-to-1, on average). In 2006, California legislators allocated 200 million dollars to the establishment of the Middle and High School Supplemental School Counseling Program (MHSSCP)—an initiative that was aimed at improving college and career guidance specifically, and which resulted in a 10 percent increase in the number of students applying to postsecondary institutions (Rowell, Whitson, & Thomas, 2008). Since MHSSCP, no other states have attempted to expand school counseling services.

The lack of legislative attention devoted to school-based college counseling may stem from the fact that, as mentioned previously, research has not adequately established the effectiveness of school counselors (Dahir & Stone, 2009; Gysbers, 2004), and in particular, their ability to aid the postsecondary planning of students (Bryan et al., 2011). Moreover, while research has demonstrated that increased educational attainment among low-SES populations is integral to sustained growth and competitiveness (Lumina Foundation, 2012; The Pell Institute, 2011), there has been a

lack of empirical evidence supporting a positive relationship between school-based college counseling and the college participation of low-SES students in particular—until now. The results highlighted above suggest that counseling can improve the postsecondary prospects of this underserved student population, perhaps in spite of recent trends within the counseling profession. Ideally, this study will encourage policymakers to consider increasing the number of school-based college counselors and/or to provide school-based college counselors with the training and flexibility they need to adequately engage in postsecondary planning.

Realistically, however, it is unlikely that low-SES schools will be receiving an influx of funds to expand or improve upon their counseling services, at least in the very near future, and especially in a climate of declining federal and state appropriations, where school accountability measures continue to revolve primarily around standardized test performance. Therefore, in the interim, and given the dearth of college information and guidance in low-SES high schools especially, it becomes prudent to evaluate the effectiveness of other, perhaps more affordable college advising alternatives that target low-SES students and that may be able to supplement or enhance the college-related work of school-based counselors.

Chapter 5

Part Two

In the past several decades, policymakers, corporations, and non-profit organizations have devoted a substantial and increasing amount of resources to the development of college enrollment and outreach programs (Domina, 2009; Perna, Rowan-Kenyon, Bell, et al., 2008). Currently, there are more than 1,000 such programs operating in the U.S., and it is estimated that they serve approximately 10 percent of all low-income students (Domina, 2009). Despite their large and increasing presence within disadvantaged schools and communities, college enrollment programs have rarely been the focus of rigorous scholarly inquiry (Swail & Perna, 2002).

Until now, only four studies have used experimental or quasi-experimental methods to evaluate the effectiveness of a particular college enrollment initiative. Moreover, only one study has focused on a college enrollment program specifically devoted to guiding students through the college application and financial aid processes (Domina, 2009). In 2006, Constantine, Seftor, Martin, Silva, and Myers (2006) employed a propensity-score matching design to estimate the effects of TRIO's Talent Search program in three states: Florida, Indiana, and Texas. The researchers found that program participants were more likely to apply for federal financial aid and to enroll in postsecondary education. However, the program's effects on "four-year" enrollment were modest and inconsistent—Florida and Texas participants experienced a slight increase in the probability of four-year enrollment, but Indiana participants did not. Aside from Constantine et al.'s study, no other study has incorporated quasi-experimental methods to assess the effectiveness of a "college knowledge" program. It is also important to note that there has never been a quasi-experimental study

of a non-governmental program of this kind; nor has any study evaluated effects of a non-governmental program that targets entire schools, as opposed to selected individuals.

Given the importance and growing popularity of non-governmental college outreach organizations, and the lack of literature supporting their effectiveness, Part Two of my dissertation attempts to assess the influence of a relatively new college outreach program implemented by the National College Advising Corps (NCAC). Launched in 2004 with a \$623,000 grant from the Jack Kent Cooke Foundation (JKCF), NCAC originally aimed to provide college admissions and financial aid support to historically disadvantaged students. Partnering with the University of Virginia, NCAC recruited and trained recent college graduates in the area of postsecondary planning and subsequently assigned them to work in various low-SES high schools throughout Virginia. In the first year of the program, NCAC advisers worked in 14 high schools across the state, each of which experienced an increase in the proportion of their graduates applying to college. Pleased with the organization's pilot year results and progress over the following several years, JKCF and the Lumina Foundation invested an additional 12 million dollars in 2007 to help NCAC achieve a national presence (National College Advising Corps, 2012).

Since then, NCAC has expanded into 13 more states and has partnered with 17 other postsecondary institutions, all of which are flagship or prestigious colleges that have a six-year graduation rates of 70 percent or higher, and that possess the strategy and capital to sufficiently train advisers and to fund at least 60 percent of annual operating costs within their respective states. According to current NCAC communications director, Mia Xavier, establishing strict selection criteria for prospective partner institutions ensures "sustainable growth and (adherence) to the model and mission of the organization" (personal communication, February 4, 2013). Since 2007, participation in NCAC has increased nearly six-fold. In the 2012-2013 academic

year, 335 NCAC advisors worked in 389 high schools across 14 states, and served over 116,000 students (National College Advising Corps, 2012). Figure 5 details the states in which NCAC is currently operating, while Figure 6 shows a nearly exponential rise in the number of students that NCAC has assisted over the past eight years.

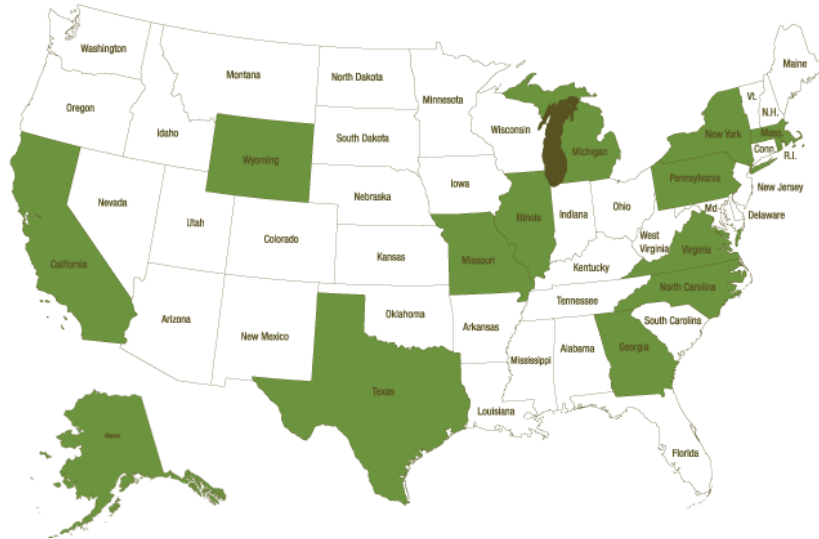


Figure 5. Participating states

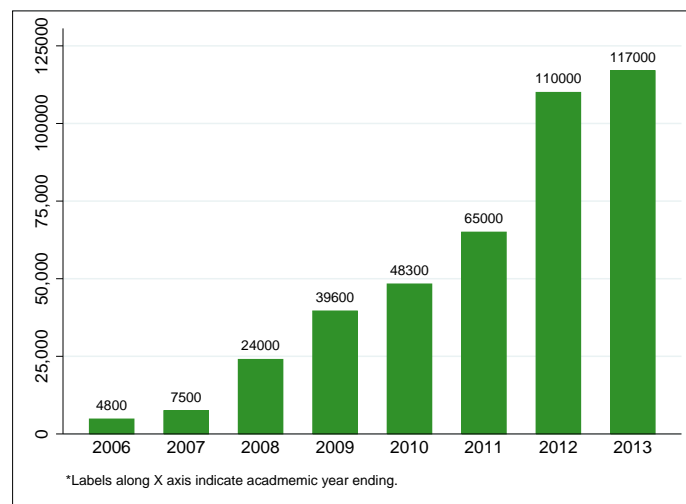


Figure 6. Students served

Subscribing to the “near peer” models of Bandura (1997a, 1997b), Portes and Zhou (1993) and others, NCAC actively recruits low-income and first generation

college graduates (more than 60 percent of NCAC advisors come from such a background) and limits its prospective advisor pool to “traditional aged college students no more than six (6) years removed from their high school experiences” and whose tenure of service “cannot extend beyond two years” (National College Advising Corps, 2012, 52) According to the NCAC training manual, “the near-peer relationship helps National College Advising Corps advisers establish credibility with students” (National College Advising Corps, 2012, 2) and enable the organization to more effectively achieve its “primary measurable outcome” of increasing enrollment among low-income, first-generation, and underrepresented students (National College Advising Corps, 2012, 92).

To date, there have been no studies assessing the enrollment-related effects of NCAC. While a team of Stanford University researchers has engaged in a number of descriptive analyses that suggest a positive relationship between NCAC intervention and certain intermediate outcomes, such as standardized test participation, financial aid application, and admission into four-year colleges and universities (National College Advising Corps, 2012), they have not (yet) accounted for the systematic and potentially confounding differences between NCAC and non-NCAC high schools.

Given the rapid growth and potential benefits of NCAC intervention, and the lack of rigorous research on the organization’s influence, the second part of my dissertation aims to answer the following research questions:

1. Does the presence of an NCAC advisor improve a high school’s college enrollment rate?
2. Does the presence of an NCAC advisor improve a high school’s enrollment rate at four-year institutions in particular?

Methodology

Data and Sample

To examine NCAC's influence on postsecondary attendance, I collect time-series-cross-sectional (TSCS) data on public high schools in three states where NCAC has established a significant presence: North Carolina, Pennsylvania and Missouri. In addition to containing a dichotomous variable indicating whether high schools participated in the NCAC initiative, data for each state includes variables specifying the annual percentage of a high school's graduates enrolling at any postsecondary institution and/or at four year institutions in particular. Other time-varying, school-level covariates that may predict school-level postsecondary enrollment rates, or confound the influence of NCAC intervention, are also collected, such as a school's average standardized test scores and the proportion of a school's students who qualify for free or reduced lunch (Engberg & Wolniak, 2010; Hill, 2008; Rowan-Kenyon, 2007).

TSCS data collected for both Missouri and Pennsylvania encompass the 2005-2006 to the 2010-2011 academic years, while data collected for North Carolina spans the 2006-2007 to 2009-2010 academic years. Despite differences in the years analyzed, data for each state includes time periods before and after NCAC "treatment", and as such, provide a suitable data space within which to employ difference-in-differences (DiD) modeling.

A quasi-experimental technique, DiD employs a fixed effects strategy to isolate group or aggregate-level changes generated by a particular treatment (i.e., intervention)—specifically by exploiting time-induced variation to control for potential observed and unobserved differences that exist across treated and control groups and which may obscure effects that are attributed to the treatment itself (Gelman & Hill, 2006). In the context of this study, DiD allows me to assess whether participating schools have experienced a significant rise in their respective enrollment

rates after NCAC intervention—while controlling for pre-existing differences in postsecondary enrollment between NCAC schools and non-NCAC schools.

In order to reduce bias and preserve integrity of the DiD design, I limit my state samples to include only high schools that graduated students in years both before and after initial NCAC intervention (in the 2008-2009 academic year). Table 3 details the sources from which data for each state was collected, while Table 4 indicates the variable means for each state sample.

As exhibited in Tables 4, NCAC schools in Missouri and Pennsylvania have decidedly lower postsecondary enrollment rates than non-NCAC schools before intervention. In Missouri, this disparity seems to be attributed, at least in part, to differences in demographics and achievement. In particular, NCAC schools in Missouri possess significantly higher free-or-reduced lunch rates and significantly lower ACT scores, on average, than non-NCAC schools. In contrast, NCAC and non-NCAC schools in Pennsylvania share strikingly similar values on these indicators, despite large differences in their respective enrollment rates. These statistics may suggest that students attending NCAC schools are “under-enrolling” in postsecondary education, and may benefit from NCAC and other interventions that aim to facilitate the college enrollment of college-qualified students. Statistics for North Carolina may suggest the opposite, as NCAC schools in the state are achieving four-year enrollment rates comparable to non-NCAC schools despite having significantly higher free-or-reduced lunch rates and significantly lower SAT scores.

Table 3: Data sources (by state)

Variable		Missouri
Postsecondary Enrollment Rate		Missouri Comprehensive Data System (mcds.dese.mo.gov)
Four-Year Enrollment Rates		Missouri Comprehensive Data System (mcds.dese.mo.gov)
Free-Reduced Lunch Rate		Missouri Comprehensive Data System (mcds.dese.mo.gov)
Average ACT		Missouri Comprehensive Data System (mcds.dese.mo.gov)
NCAC Participation		Missouri College Advising Corps (enrollment.missouri.edu/mcac)
Variable		North Carolina
Postsecondary Enrollment Rate		NA ^a
Four-Year Enrollment Rates		University of North Carolina (northcarolina.edu/ira/ir/analytics/fresh)
Free-Reduced Lunch Rate		Public Schools of North Carolina (ncpublicschools.org/fbs)
Average SAT		Public Schools of North Carolina (ncpublicschools.org/accountability)
NCAC Participation		National College Advising Corps Staff
Variable		Pennsylvania
Postsecondary Enrollment Rate		PA Department of Education (education.state.pa.us/portal/server.pt)
Four-Year Enrollment Rates		NA ^b
Free-Reduced Lunch Rate		PA Department of Education (education.state.pa.us/portal/server.pt)
Average SAT		PA Department of Education (education.state.pa.us/portal/server.pt)
NCAC Participation		National College Advising Corps Staff

^a North Carolina does not currently require high schools to submit two-year enrollment counts, which precludes me from calculating calculate enrollment rates in postsecondary education overall

^b Pennsylvania does not require high schools to distinguish between two-year and four-year enrollment, which precludes me from calculating four-year enrollment rates

Table 4: Variable means: NCAC vs. non-NCAC (before intervention)

Variable	Missouri		North Carolina		Pennsylvania	
	NCAC	non-NCAC	NCAC	non-NCAC	NCAC	non-NCAC
Postsecondary Enrollment Rate	50.26	61.58	NA ^a	NA ^a	50.74	67.32
Four-Year Enrollment Rates	28.29	34.88	26.14	26.77	NA ^b	NA ^b
Free-Reduced Lunch Rate	54.91	38.35	61.35	38.33	28.43	29.65
Average SAT/ACT	18.26	20.75	1302.68	1450.84	1438.46	1427.73
<i>N</i> (No. of Schools)	11	463	33	320	16	556

^a North Carolina does not currently require high schools to submit two-year enrollment counts, which precludes me from calculating calculate enrollment rates in postsecondary education overall

^b Pennsylvania does not require high schools to distinguish between two-year and four-year enrollment, which precludes me from calculating four-year enrollment rates

Table 5: Variable means: NCAC vs. non-NCAC (after intervention)

Variable	Missouri		North Carolina		Pennsylvania	
	NCAC	non-NCAC	NCAC	non-NCAC	NCAC	non-NCAC
Postsecondary Enrollment Rate	58.95	63.29	NA ^a	NA ^a	55.72	67.99
Four-Year Enrollment Rates	29.23	32.53	23.50	24.89	NA ^b	NA ^b
Free-Reduced Lunch Rate	63.32	43.70	65.61	42.91	33.09	34.04
Average SAT/ACT	17.61	20.66	1284.67	1448.54	1418.41	1427.21
<i>N</i> (No. of Schools)	11	463	33	320	16	556

^a North Carolina does not currently require high schools to submit two-year enrollment counts, which precludes me from calculating calculate enrollment rates in postsecondary education overall

^b Pennsylvania does not require high schools to distinguish between two-year and four-year enrollment, which precludes me from calculating four-year enrollment rates

The descriptive statistics in Table 5 appear to support these hypothesis, as NCAC schools in both Pennsylvania and Missouri experience substantial gains in their postsecondary enrollment rates (anywhere), relative to non-NCAC schools, while NCAC schools in North Carolina experienced no gains at all, at least on average. Of course, in order to determine whether gains in Missouri and Pennsylvania are actually attributed to the NCAC intervention, one must incorporate analytic techniques to control for other school-level factors that may also influence postsecondary enrollment.

Analytic Design

In cross-sectional evaluations of a college outreach initiative, estimated treatment effects may confound intervention-related gains in enrollment with other school-level attributes that explain enrollment differences between high schools, such as student demographics or a school’s academic quality. Likewise, a pure time-series analysis may uncover a significant post-treatment effect, but the effect may be spurious due to simple time trends that move most high schools schools to experience changes in their respective enrollment rates. In contrast, DiD controls for pre-treatment enrollment differences *and* enrollment trends—in effect, using both as benchmarks against which to compare the post-intervention enrollment rates of NCAC and non-NCAC high schools, thus enabling me to distinguish whether, and to what extent, post-NCAC effects are attributable to the NCAC intervention itself. The DiD model is formally expressed as:

$$Y_{st} = \beta_0 + \beta_1 I_{st} + \beta_2 A_t + \gamma \mathbf{X}_{st} + \delta_1 I_{st} A_t + \epsilon_{st} \quad (7)$$

where Y_i is the outcome of interest, the percentage of graduating seniors, S , enrolling in postsecondary education after graduation in year, t ; I_{st} is a dichotomous measure indicating whether a high school, S received the NCAC “treatment” in year t and captures pre-treatment differences in enrollment between treated and control

high schools, as well as their fixed effects ; A_t is a dichotomous measure equaling 1 in years during and after NCAC began operations and captures changes in enrollment that may have occurred in the absence of NCAC intervention; \mathbf{X}_{st} indicates a vector of relevant covariates, namely those indicating the annual number of graduates, average standardized test scores and free or reduced lunch rates of sampled high schools; and δ_1 , the coefficient of interest, interacts the intervention and time indicators and represents the DiD estimate, where:

$$\delta_1 = (Y_{\text{Treat}(\text{after})} - Y_{\text{Treat}(\text{before})}) - (Y_{\text{Control}(\text{after})} - Y_{\text{Control}(\text{before})}) \quad (8)$$

which represents the enrollment *difference* between the pre- and post-NCAC time periods, *in* (i.e., while controlling for) the preexisting *differences* in enrollment between NCAC and non-NCAC high schools.

Given the standard OLS formulation of the above model, it is necessary to account for characteristics of my data and sample that could lead to bias and/or inefficient estimates, even within the DiD framework. First, given that some high schools within each state receive the initial NCAC treatment in later years (2009-2010 or 2010-2011), the simplified model in Equation 9 may over- or under-estimate the effect of NCAC intervention since it assigns treatment to some participating schools that have yet to receive an NCAC advisor. As a corrective measure, I incorporate school and year fixed effects (Bertrand, Duflo, & Mullainathan, 2004; Dynarski, 2004) in order to specify the exact year in which a participating school received intervention and, in contrast to the simplified model in Equation 9, to account for variation in the duration of “treatment” among participating high schools. In particular, I estimate the following revised model, which should provide more refined evidence of an NCAC effect:

$$Y_{st} = \alpha \mathbf{A}_s + \beta \mathbf{B}_t + \gamma \mathbf{X}_{st} + \delta_1 I_{st} + \epsilon_{st} \quad (9)$$

where α and β are fixed effects for schools (capturing differences in enrollment between NCAC and non-NCAC schools) and years (capturing differences in enrollment between years), respectively; \mathbf{X}_{st} represents a vector of included covariates; ϵ_{st} is an idiosyncratic error term; and δ_1 is my coefficient of interest and equal to one only for participating schools *and* only during those years in which an NCAC advisor was present.

Additionally, given that my analysis encompasses multiple years before and after NCAC intervention, I also conduct a series of Durbin-Waston tests, which yield evidence of serial correlation in the simple and revised models (Equations 9 and 10, respectively) for all states. To correct for possible Type 1 error, I incorporate cluster robust standard errors into each of my models (White, 1980), which adjust the estimated variance-covariance matrix to account for correlated residuals within clusters (i.e., schools) and which should enable DiD to yield efficient estimates of the NCAC treatment effect, especially given that my sample has an N of greater than 50 (Bertrand et al., 2004).

Finally, after estimating both models, I explore whether my DiD design meets the assumption of parallel trends. In order to yield unbiased estimates, DID models must meet the very strong assumption that treated and control would exhibit parallel trends in the absence of intervention (Angrist & Pischke, 2009)—which, according to Abadie (2005), “may be implausible if pre-treatment characteristics that are thought to be associated with the dynamics of the outcome variable are unbalanced between the treated and untreated group” (p. 2).

Potentially, there are differences between NCAC and non-NCAC high schools not accounted for by Equations (9) and (10), and which may influence the direction and rate at which postsecondary enrolment rates among the two types of schools change. While pre-treatment enrollment rates and observed covariates in each model control for at least some of this variation, there may be other omitted characteristics

on which NCAC and non-NCAC high schools differ and which determine their enrollment rates in future years—this would preclude accurate estimation of the NCAC treatment effect.

Causal inference via DiD or any other quasi-experimental technique requires that the researcher construct an appropriate counterfactual scenario where treated units are instead assigned to the control group, and vice versa—since any unit can be observed under only one of two conditions. For example, in order to infer a causal effect of the NCAC intervention, one needs to adequately approximate the postsecondary enrollment rate of a “treated” high school under control conditions (i.e., if it was not subject to the NCAC intervention). Constructing this counterfactual condition or “what if” scenario facilitates *estimation* of the average treatment effect of the NCAC intervention: $E[Y_{1i} - Y_{0i}]$. Doing so, however, requires that NCAC schools are compared to “control” high schools that, given their characteristics and context, would exhibit similar enrollment trends in the absence of NCAC treatment. If treated and control high schools differ on particular unobservables that lead to diverging enrollment trends, regardless of intervention, it becomes impossible to determine whether or which portion of a potential NCAC effect is attributable to NCAC treatment, or to another difference, policy change, or event that is not accounted for by the above model and which may also influence selection into treatment and/or the postsecondary enrollment rates of sampled high schools.

Although the parallel trends assumption is not formally testable, I adopt two additional techniques to ensure and subsequently demonstrate that parallel trends criteria have been met (Bertrand et al., 2004). First, after estimating the models in equations (8) and (9), I re-estimate both models on a disaggregated sample of schools within two of the three state included in my analysis, and which include only those schools that compare on certain pre-intervention characteristics that high schools must possess in order to be eligible for NCAC intervention within their states.

Although NCAC requires that state chapters focus exclusively on “high need” high schools (National College Advising Corps, 2012), each chapter ultimately determines which schools are selected for intervention (Mia Xavier, Director of Communications for NCAC, personal communication, February 4, 2013). For example, the Keystone College Advising Corps (Pennsylvania) sets no eligibility criteria, and according to its program director, will “serve any school as long as funding is available” (R. Freund, personal communication, March 1, 2013). Currently, the organization serves high schools of widely varying college-going and free-or-reduced lunch rates, and as such, is the only state not subject to disaggregated analysis in this study.

In contrast, Missouri serves only high schools with postsecondary enrollment rates of less than 65 percent, while North Carolina only works with high schools possessing a free or reduced lunch rate of 50 percent or higher. Disaggregated samples for Missouri and North Carolina are limited to NCAC and non-NCAC high schools that meet these criteria. Presumably, disaggregated analysis on both states should ensure my findings relate only to those schools that, given their attributes, could potentially receive treatment *and* are anticipated to exhibit similar college enrollment trends in the absence of an intervention.

Second, after estimating my models, I conduct a series of placebo tests to confirm my findings and to evidence that significant effects are the result of NCAC, and not other factors excluded from equations (8) and (9) (Bertrand et al., 2004). To carry out placebo testing, I estimate DiD models in each state, including only TSCS data for years prior to the NCAC intervention (2006 to 2008), and then assign NCAC treatment to all schools in years after 2006 but prior to intervention (in 2007 and 2008). I anticipate that placebo models indicating treatment in 2007 and in 2008 will yield insignificant effects for the NCAC intervention, since treatment is synthetic and never actually occurs. However, if the NCAC variable is significant in either model, I am inclined to assume that effects attributed to NCAC are spurious (and possibly

null) and that changes in enrollment rates, if any, are due to other unobservable measures.

Limitations

Limitations associated with this study revolve primarily around the availability and quality of the data collected, and are unique to each state. For example, post-secondary enrollment data provided by the Pennsylvania Department of Education (PDE) are self-reported (i.e. school-reported) and, currently, systems have not been instituted that allow PDE to verify and/or cross-reference the college-going rates of individual high schools within the state, despite the fact the reliable postsecondary outcomes data for each school exists and has been collected for years by institutions of higher education and other trusted third-party sources, such as the National Student Clearinghouse.

In other states, such as North Carolina, university administrators have made efforts to collect and publish the postsecondary enrollment rates and college destinations of high school graduates; however, data collection within North Carolina remains inconsistent and does not encompass movement into all sectors of the higher education system. While I was able to extract statistics on the percentage of a high school's students attending four-year institutions within the University of North Carolina system, I do not have data on the proportion of NC students attending private colleges and universities, two-year institutions, and out-of-state institutions. Given that NC high school graduates matriculating into four-year schools consistently enroll at in-state public institutions at a rate of approximately 80 percent ⁷, I should be able to reasonably estimate the effect of NCAC intervention on four-year enrollment;

⁷Using raw institutional data provided by the Integrated Postsecondary Education Data System, I tallied the number of NC residents (who graduated from high school in the past 12 months and) who matriculated at every four-year institution in the United States in each year for the past ten years. Annual in-state, public rates were yielded by dividing the number of NC residents attending four-year, in-state public institutions "into" the number of NC residents attending any four-year institution during a given year.

however, the absence of institutional data in the two-year sector does preclude me from analyzing NCAC effects that are related to two-year enrollment, and postsecondary enrollment in general—in North Carolina specifically.

Unlike North Carolina, Missouri's secondary and postsecondary systems do coordinate to offer four-year and two-year enrollment data for all state high schools, but it too does not track the postsecondary destinations of students who move out of state for college. In fact, only a handful of states have collaborated to share postsecondary enrollment data, or to track the college attendance and progress of migrating residents. Unfortunately, all such collaborations were short lived, primarily due to the federal and state-specific barriers that prevented or slowed data exchange (Hossler et al., 2012; National Center for Higher Education Management Systems, 2008). These barriers include federal privacy laws, incompatible data systems, lack of resources, lack of a common student identifier, and various political issues (Data Quality Campaign, 2011). Garcia and L'Orange (2010) claim every state within the U.S. has much progress to make in collecting and providing the data elements that will allow researchers and policymakers to adequately understand the education pipeline and to effectively evaluate the impact of college readiness interventions.

In addition to lacking complete data on the postsecondary destinations of all high school students, many states fail to collect data on other measures that convey the academic quality and/or college-going culture of high schools. For example, while I was able to access data indicating the percentage of low-income and minority students attending each school within each of the three states in my sample, I was not able to access data on other possible school-level predictors of postsecondary enrollment, such as Advanced Placement/International Baccalaureate participation and teacher or counselor experiences and resources. However, given that variables indicating SAT performance and low-income student share are adequate proxies for the academic quality and resources of a particular school (Bell, Rowan-Kenyon, & Perna, 2009;

Bowen et al., 2009), I am hopeful that my models and analytic design sufficiently control for other school-level characteristics that may confound NCAC-related effects.

Results

Results for the DID models described above are indicated in Table 6. Coefficients and robust standard errors are presented for variables assessing the enrollment-related effects of NCAC, and “X’s” in each column indicate the specification (with or without fixed effects) and type of sample (full or disaggregated) for which each model was estimated. In Missouri, NCAC intervention appears to have a substantial and significant influence on the general postsecondary and four-year enrollment rates of participating high schools, particularly when the full sample and simple model specification are used, and even when accounting for possible placebo effects. However, when school and year fixed effects are incorporated, NCAC’s influence on four-year enrollment, in particular, becomes indistinguishable from zero. Further, when the fixed effects model is estimated on the disaggregated sample, which is limited to Missouri high schools possessing enrollment rates of 65 percent or lower (and that are eligible for NCAC intervention), NCAC effects are no longer significant for four-year enrollment and postsecondary enrollment overall. In sum, NCAC intervention within Missouri may have a positive effect on school-level postsecondary enrollment rates, given positive estimates across all models; however, insignificant results for my more refined models, including fixed effects and/or eligible high schools only, prevent me from concluding that this indeed the case.

Table 6: Estimating the influence of NCAC on postsecondary enrollment

State	Missouri					North Carolina					Pennsylvania				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Model															
NCAC (Anywhere)	6.97*	8.44*	6.86	6.18	5.44	NA	NA	NA	NA	NA	4.31***	4.91***	5.17***	NA	NA
Robust Std. Error	(3.32)	(3.33)	(3.94)	(3.34)	(3.90)						(1.18)	(1.21)	(1.42)		
Placebo Effect ^a	NO	NO	-	-	-	-	-	-	-	-	NO	NO	NO	-	-
NCAC (Four-Year)	3.30	5.23*	4.16	3.46	3.16	-0.01	-0.02	-0.01	0.60	0.27	NA	NA	NA	NA	NA
Robust Std. Error	(2.11)	(2.08)	(2.51)	(2.07)	(2.51)	(1.18)	(1.24)	(1.31)	(1.35)	(1.51)					
Placebo Effect ^a	-	NO	-	-	-	-	-	-	-	-	-	-	-	-	-
Full Sample	X	X	X			X	X	X			X	X	X		
Covariates		X	X	X	X		X	X	X	X		X	X		
Fixed Effects			X		X			X		X			X		
Disaggregated				X	X				X	X					
N	2804	2802	2802	1734	1734	1378	1374	1374	392	392	3430	3407	3407		

^a I test for placebo effects in models where the coefficient for NCAC is significant.

^b NA indicates that data was not available to estimate an effect.

Results for North Carolina are more decisive, but do not support positive effects of NCAC intervention, at least when it comes to four-year enrollment. All DID models for the state, irrespective of specification or sample, failed to yield significant estimates. These results are not entirely surprising, however, since participating schools possessed four-year enrollment rates that appeared to be higher than expected, and that were comparable to schools with more advantaged and abled populations, at least according to the descriptive statistics detailed in Table 4. Regardless, it is important to emphasize that insignificant results for North Carolina, or any other state, do not confirm the ineffectiveness of NCAC, especially given the data limitations inherent in this study (North Carolina does not provide data for two-year or private college enrollment) and the relative youth of the organization.

Like North Carolina, Pennsylvania does not currently provide two-year enrollment data; however, it does provide data on postsecondary enrollment overall. And NCAC-related effects this state and outcome do prove more favorable. Specifically, results in Pennsylvania suggest that NCAC intervention has a positive and significant effect on the overall postsecondary enrollment rates of participating high schools, even

when fixed effects and other possible placebo effects are controlled for. Disaggregated models are not estimated, since, as indicated previously, the Pennsylvania chapter of NCAC does not set eligibility criteria for prospective high school partners.

Findings for Pennsylvania are encouraging and somewhat expected given the disparity in enrollment rates among NCAC high schools and their non-NCAC counterparts, which possess very similar demographic and achievement indicators. More explicitly, given the economic circumstances and demonstrated achievement of its students, NCAC schools in Pennsylvania seemed to have “great room” for improving their postsecondary enrollment rates and may have been especially well-suited to benefit from the addition of an NCAC advisor.

Discussion

As school-based counselors assume expanded job roles and take on additional tasks unrelated to college planning, NCAC and other similar outreach organizations will become increasingly important to the postsecondary prospects of low-SES students in particular, as they are often able to provide the guidance and capital such students need to successfully transition into higher education. However, although important, NCAC and college counseling in general is not a panacea for the social and economic ills that prevent many low-SES students from pursuing a college degree—as the organization so clearly states: “The National College Advising Corps has no intention of claiming to be the silver bullet to instantly solve issues regarding lack of college access in low-income communities” (National College Advising Corps, 2012, 30).

As illustrated in my conceptual framework, the effectiveness of school-based college counseling largely depends students’ willingness and ability to use their counselors. In particular, Figure 1 shows an interdependent relationship between counseling and habitus, the latter of which encompasses the academic preparation and

social capital that moves an individual to capitalize upon school supports and strive toward college readiness. If students are without the intellectual, social and/or cultural prerequisites to academic success, they are unlikely to benefit from what is ultimately academic advice. Frankly put, there are many students confronting enormous personal, social and intellectual barriers to college access, and for whom college counseling will never be sufficient. Consequently, and in order to have the greatest impact on college enrollment, counseling-related interventions must target students with high need *and* requisite potential. Although “potential” is a slippery concept, and much more difficult to gauge than need, NCAC and other high school-based outreach programs should at least attempt to distinguish students who can truly yield benefit from students whose attitudes and record of achievement are not indicative of postsecondary success. This task is difficult and often unpleasant, but necessary given current financial constraints and given the clear, yet limited influence of college counseling.

Fortunately, NCAC already recognizes student potential as a prerequisite to program success, and explicitly instructs its advisors to “focus their efforts on students who have the potential to enroll (in college)”(National College Advising Corps, 2012, 8). This study suggests that NCAC’s institutional partners should follow suit, and focus exclusively on serving high schools with realistic potential to grow their enrollment rates. And as the results in Pennsylvania indicate, potential, or measured disparities between achievement and enrollment, may be an equally or more important target than need alone, at least when it comes to improving enrollment rates.

Despite Pennsylvania’s disregard for NCAC’s recommended, need-based criteria, it appears to exert the most influence on school-level postsecondary enrollment. Although the PA chapter’s focus on “high-potential” schools is likely unintentional—in light of the PA program director’s willingness to serve “any high

school, anywhere”—its success could serve as a model for other NCAC chapters. Of course, given the data limitations inherent in this study, there could be other explanations for outcomes within the state. For example, PA serves schools in a geographically concentrated area (south-central PA only) and may benefit from the organizational advantages that such proximity can generate, like greater opportunities for sharing resources, a more frequent exchange of ideas, and a greater familiarity with the community and population it serves. However, other research on improving college access suggests that PA’s focus on “low-hanging fruit” is at least one reason for its influence (Carnevale & Strohl, 2010b).

Although the above results reveal positive and consistent NCAC effects for PA only, they should not provide a basis for judgement or condemnation of NCAC efforts within North Carolina, Missouri, or any other state where the organization has established its presence. In addition to the data limitations associated with this study, it is important to keep in mind that this study focuses on one outcome only and does not attempt assess NCAC’s influence on a multitude of intermediate outcomes—including standardized test registration, college application, and FAFSA completion—which could eventually facilitate greater postsecondary enrollment, as well as better college match, lower educational debt and improved time to degree. It is also important to keep in mind that NCAC is a very new college outreach initiative, and that current data limitations prevent anyone from making conclusive assertions about whether the organization is sufficiently meeting its objectives, especially when theory and current circumstances suggest a strong need for counseling-based college outreach, and especially since this study, despite its many insignificant findings, suggests that there is promise for NCAC in particular.

Ultimately, this study is not intended to be a sweeping evaluation of NCAC; instead, it strives to provide insight into how a relatively new college counseling organization can improve upon its model and offerings to more effectively raise enrollment

rates in particular. Rigorous assessment in three states yields several recommendations. First, in addition to considering financial need and current college-going, NCAC should assess expected versus actual postsecondary enrollment. Expected enrollment rates of prospective high school partners can be yielded via descriptive or regression analyses that incorporate measures indicative of college readiness and college-going behavior, such as SAT/ACT registration, average SAT/ACT scores, Advanced Placement (AP) and/or International Baccalaureate participation, math and science performance, and curricular offerings in college preparatory coursework. High schools with a high proportion of low-income, first-generation and underrepresented students, *and* which possess large differentials between their anticipated and actual enrollment rates, should be given primary consideration.

Second, NCAC should reconsider or at least reframe its “open door, whole school approach to advising” (National College Advising Corps, 2012, 31). This does not require that NCAC advisers turn away individuals who actively seek their assistance; it simply means that NCAC should examine what school-wide activities facilitate greater contacts with target populations (i.e., disadvantaged students with college potential) and what others are ancillary or superfluous to the organization’s objectives. For example, do advisors spend a substantial amount of time organizing college fairs, college visits, writing workshops, and/or group meetings? If so, do these activities attract or sway reasonably accomplished students who are at risk of not enrolling, or do they simply provide another point of contact for students who are already committed to attending college? Further, to what extent do such activities supplant individual advising? Previous research suggests individual advising has significantly more impact on the college-related actions of students than informational and/or group activities (Bettinger & Baker, 2010; Bettinger, Long, Oreopoulous, & Sanbonmatsu, 2010; Scott-Clayton, 2011). As such, NCAC staff should carefully determine—via subjective assessments, participation reports, and/or meetings with a

school’s counseling staff and administration—which school-wide pursuits justify time spent away from individual counseling.

Finally, in addition to distinguishing appropriate and beneficial school-wide activities, NCAC advisors should also work with their institutional sponsors and host high schools to more effectively identify and assist college-qualified students who confront real or perceived barriers to postsecondary attendance. Similar to what should occur in an analysis of prospective high school partners, NCAC advisors should review measures that evidence college readiness, including high school grades, standardized assessment scores, course-taking, extracurricular participation, and teacher reports, if possible. Then, with the assistance of other school staff, advisors should catalog students with attitudes and/or circumstances that commonly discourage college entry. Academically able students who are unlikely to enroll in postsecondary education, or who are unsure about their ability or means for postsecondary success, should be labeled as “high priority” and should be the primary target of an advisor’s outreach strategy and activities.

In sum, assessing the effectiveness of particular college-related interventions, as well as the gaps between readiness and enrollment, can help NCAC focus its efforts on the students and activities that significantly improve postsecondary enrollment and that help the organization to achieve its primary mission and aim.

Chapter 6

Conclusion

As a whole, this two-part dissertation set out to understand the relationship between school-based college counseling and postsecondary enrollment, among low-SES students especially. Part One focused on traditional school counselors, and their college-related interactions with tenth and twelfth grade students in particular. After employing a number of bias-reducing techniques, results showed that visits to a school counselor for college planning have a positive and significant influence on postsecondary enrollment, and also revealed that effects are largest for students at lower ends of the socioeconomic scale.

Although encouraging, the findings yielded in Part One must be considered in context. School counselors who serve low-SES students are increasingly unable to provide sufficient college guidance, as their job roles have expanded to focus on a host of functions and activities that have more to do with discipline, administration and/or mental health support, and less to do with college planning. Moreover, among the counselors who are allocated sufficient time for college planning, many do not receive the training necessary to competently guide students through the college transition process. Currently, less than 25 percent of low-SES high schools require their counselors to complete professional development in college advising (Clinedinst et al., 2011), while less than 10 percent of counselor education/training programs offer coursework or practica devoted to college admissions and/or financial aid (Savitz-Romer, 2012; The National Association for College Admission Counseling, 2004). Explicitly put, although results from Part One reveal the potential benefits of school-based college counseling, many low-SES students (and particularly those attending

high schools where the majority of other student are also low-SES) are without access to a school counselor, and/or are unlikely to visit with a counselor who possesses the requisite knowledge and skills to provide adequate college guidance.

The move away from college counseling, although pervasive in low-SES high schools, is becoming the norm in more advantaged settings too, and is largely due to the increasingly manifold and ambiguous role of the school counselor (McDonough, 2005)—a trend that many believe will continue, given that counselors have not sufficiently demonstrated their professional impact (Baker, 2001; Beesley, 2004; House & Hayes, 2002). In response to the curtailment of school-based college counseling, more advantaged students have sought “outside” assistance, and have increasingly relied on a burgeoning industry of private counselors to secure their place in the most selective and affluent tiers of an increasingly stratified postsecondary system (Espenshade & Radford, 2009; McDonough et al., 1997). Consequently, gaps in college-related information, resources and support are being compounded, as are the disadvantages that low-SES students face with respect to their educational and professional advancement.

Some have recognized the growing socioeconomic disparities in college-related information and guidance, and have sought to supplement or compensate the lack of college counseling within low-SES high schools. Non-profit, non-governmental organizations such as College Summit (Washington, DC), College Forward (Austin, TX), College Possible (Saint Paul, MN) and the National College Advising Corps (NCAC) have raised funds and recruited to staff to enter low-SES high schools and assist low-SES students in preparing and planning for postsecondary education. NCAC participation and college attendance data in several states allowed for a pilot assessment of the organization’s influence on postsecondary enrollment in particular, and results from Part Two suggest that NCAC may improve college attendance

in high-need high schools where enrollment rates are less than what measures of college readiness would appear to indicate.

While NCAC and other similar initiatives offer promise to the low-SES students and high schools they serve, it is unrealistic to assume that non-profit intervention is a scalable and sustainable solution to the national deficit of college counseling among low-SES and other disadvantaged populations, especially given that these organizations rely on generous funding from a limited number of education-focused donors. However, these organizations can serve as a model of effective college guidance and can remind policymakers and other stakeholders that counseling does “matter,” and that it can contribute to improving postsecondary enrollment and attainment in the United States. This dissertation serves a similar purpose.

In addition to yielding substantive recommendations for policy, this dissertation also endeavored to confirm and situate a counselor’s role within theoretical frameworks of college choice. In particular, these studies add to a growing body of research supporting the important relationship between school personnel, disadvantaged students, and postsecondary choice (Engberg & Wolniak, 2010; McDonough, 1997; Perna, 2006)—identifying school counselors as an essential link in the college-going process for low-SES populations and to which low-SES students may connect for college guidance, as my conceptual framework suggests. Furthermore, they reaffirm what theories of human and social capital have intimated: that when given the time and opportunity, school counselors can connect low-SES and other disadvantaged students to the individuals and resources needed for college transition (Kim & Schneider, 2005; Plank & Jordan, 2001).

Despite these encouraging findings, it is important to reiterate the need for further research on the role and influence of school-based college counseling. While this study was able to uncover the potential benefits of counseling in general, the variables and data on which it relies prevent analysis of what elements of a counselor’s

background, and what advising activities in particular, have the greatest influence on postsecondary enrollment. As such, recommendations for future research include quantitatively and/or qualitatively exploring how school counselors encourage college enrollment and choice, as well as assessing the “college knowledge” and professional development needs of school-based counselors—who, for better or worse, are the professionals currently and primarily responsible for facilitating postsecondary transition. Equally important is the need for research on the relationship between school-based counseling and postsecondary completion. Several studies show that even when low-SES students manage to access higher education, they are still less likely to persist and graduate (Tinto, 1987; Bowen et al., 2009). As such, it becomes necessary to assess long-term effects and to determine whether school-based counselors, despite their initial influence, are improving the postsecondary attainment of socioeconomically disadvantaged students, and more broadly, contributing to this nation’s college completion goals.

Finally, this dissertation strived to make a methodological contribution to the assessment of college counseling and to the study of higher education. Parts One and Two achieve the former, as both studies constitute the first quasi-experimental analyses examining the relationship between school counseling and postsecondary enrollment. Part One achieves the latter by introducing coarsened exact matching (CEM) to the higher education field and by incorporating and explicitly detailing the use of full-information maximum likelihood—a method of estimation that should allow higher education researchers to reduce bias and to control for missing data, while bypassing complex and potentially bias-inducing imputation techniques.

Beyond original contributions, and perhaps more important, this study adds to a growing body of research that relies on recent developments in quantitative methodology to more accurately and transparently assess the influence of education programming and interventions. In addition to methodological advancements, recent

advancements in computing technology and data collection and sharing compel education researchers toward a higher methodological standard. In an increasing number of instances, descriptive analyses, although important and illuminating, should not and need not suffice for actionable research on “what works” in education. Ideally, this dissertation meets the level of methodological rigor that our current circumstances demand and that our students so clearly deserve.

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